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THE NEW ZEALAND
JOURNAL OF AGRICULTURE

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New Zealand Cocksfoot Seed Is of Good Strain, BUT—

★ *New Zealand cocksfoot is unsurpassed in quality by any other known strain, but can New Zealand at the same time produce seed of higher quality? Great Britain has drawn attention to the low purity of New Zealand cocksfoot seed, and urges the Dominion in the interests of the trade to improve the position.*

By
J. H. CLARIDGE,
Seed Certification Officer,
Wellington.

AFTER Sir George Stapledon visited this country in 1922, he returned to Wales enthusiastic over the good qualities of "Akaroa" cocksfoot, and since that time hardly a publication of the eminent agrostologist but refers in highest terms to this New Zealand product. What his readers have failed to realise, however—what perhaps he himself was not certain of—was that the term "Akaroa" was descriptive of a type rather than of a centre of production.

That this is nevertheless a fact is brought home to us by the results of a large number of tests undertaken by the Grasslands Division of the Plant Research Bureau in conjunction with the Department of Agriculture in order to determine eligibility under the seed certification scheme. The results demonstrate that fully 99 per cent. of the samples under trial, which were obtained from seed-producing areas on the Canterbury Plains and elsewhere, are quite indistinguishable from the samples originating from the Akaroa (Banks) Peninsula. This fact, although perhaps strange at first sight, is quite understandable when one realises that the Akaroa Peninsula was actually the home of this type of cocksfoot, which has since become established throughout the length and breadth of New Zealand. Realisation of this fact led the Department of Agriculture to adopt the wider descriptive term of "New Zealand Certified Cocksfoot" to identify this type rather than the more restrictive term of "Akaroa," which had at that time become recognised as describing the produce of the Peninsula itself.

It is quite beyond doubt, however, that the term "Akaroa" as used by Sir George Stapledon and the term "New Zealand Certified" as used by the New Zealand Department of Agriculture are synonymous in referring to that outstanding strain of cocksfoot originating on Banks Peninsula but now represented by virtually every cocksfoot plant in New Zealand.

So much for the strain of New Zealand cocksfoot, unsurpassed in quality by any other strain known.

Purity Not Satisfactory

When the purity of New Zealand-grown seed is examined a rather different picture presents itself. Thus, while we have realised that fairly high percentages of inert matter (empty husks) were recorded in samples of finally-dressed seed, this was looked upon as inevitable.

It was nevertheless disconcerting to the Department to receive an advice recently from England pointing out the great possibilities for our cocksfoot seed in that country, but protesting against the unsatisfactory purity of much of the seed received there lately.

Cocksfoot seed under certification in New Zealand must reach a minimum purity standard of 70 per cent. before it can be finally sealed and tagged as certified seed. This figure is low, not because a higher figure is unwarranted, but because it would exclude from certification considerably greater quantities than at present of seed of good strain. Nevertheless, the advantage held in the past by countries such as

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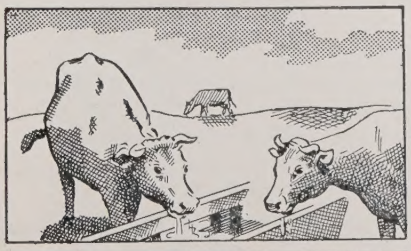

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Denmark, which can regularly market seed of 90 per cent. purity, is obvious. At the present time, with Denmark temporarily out of the running, the trade is swinging to New Zealand. We must realise, however, that this will be only temporary—occurring under the stress of the times—unless we can show a material improvement in the purity of the seed we ship overseas.

In order to throw as much light as possible on the question of cocksfoot seed purity, a detailed analysis has been made of every line of cocksfoot seed machine-dressed under certification during the 1941 season.

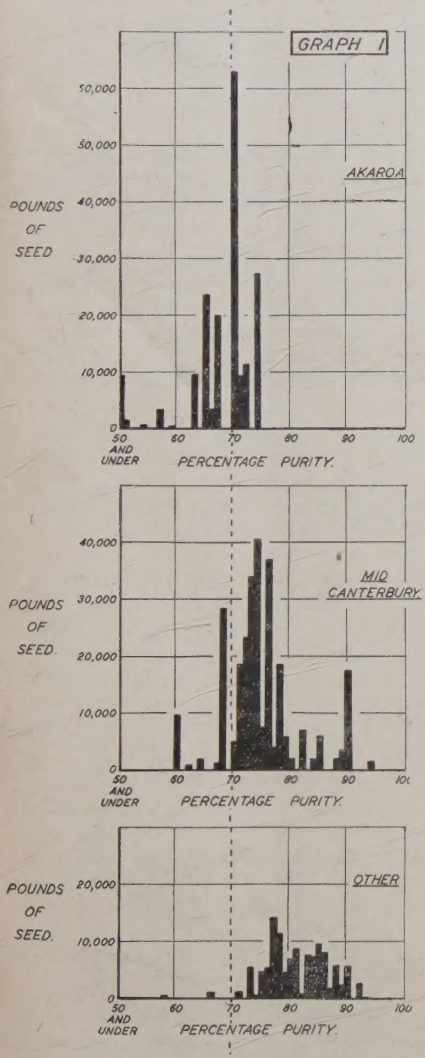

Fig. 1.—Showing the quantities of M/D cocksfoot seed from the main cocksfoot-growing areas, grouped according to purity, and showing the seed accepted and rejected for certification.

The main results of this analysis are shown in Fig. 1. The lines of seed have been grouped into three districts of origin, and the graph records, for each such district, the quantity of seed reaching varying percentages of purity after machine-dressing.

For convenience of study, all districts other than "Akaroa" and "Mid-Canterbury" have been grouped together. This wide group is further subdivided in Fig. 2 into three distinct districts, in each of which, however, it can be seen that the cocksfoot seed is generally of high purity.

Detailed Analysis

In condensed form, the quantities of seed reaching the certification standard of 70 per cent. purity and the quantities failing to reach that standard are as follows:—

	Seed reaching Cert. Standard. (lb.)	Seed failing to reach Cert. Standard. (lb.)
Ashburton County ..	235,613	42,476
*Akaroa	110,668	72,584
South Canterbury (Rangitata to Waitaki)	57,765	1,577
North Canterbury (North of Rakaia)	43,590	—
Otago and Southland	14,992	—

* The figures for this district are affected by the facts firstly, that 10 per cent. of seed reaching certification standard was machine-dressed three times before a purity of 70.6 per cent. was attained, and secondly, that nearly 30,000 lb. of seed originally rejected for low purity was lifted above the minimum purity by blending with a line which, in the first instance, had a purity of 75.9 per cent.

There are several lessons which can be learnt from a careful study of the information contained in these figures.

Firstly, it is evident that there is considerable variation from district to district in regard to the purity of cocksfoot seed after machine-dressing. Most striking in this respect are the Akaroa figures, where not one line had a purity higher than 75 per cent. after machine-dressing and only 60 per cent. of the seed off the machines qualified for certification. A check back on the 1940 and the 1939 figures for this district indicates that similar results also obtained in those seasons.

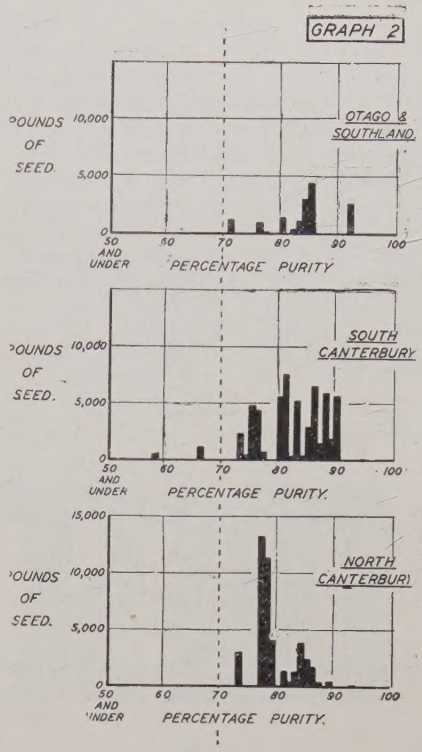

Fig. 2.—As for Fig. 1, but subdividing into its component districts the seed shown in Fig. 1 as "other."

On the other hand, there are districts which are as yet relatively unimportant in their contribution of certified seed, but which are outstanding in regard to the purity of the seed produced, 57 per cent. of the seed machine-dressed from these districts containing more than 80 per cent. of pure seed and 98½ per cent. of the seed qualifying for certification.

The Ashburton County (to which the term "Plains" is usually given in connection with cocksfoot seed) produced in 1941 more than 50 per cent. of the total production of finally certified seed, while the purity graph for machine-dressed seed from this district falls approximately mid-way between that of Akaroa-grown seed and seed

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produced in other districts. Fifteen per cent. of the M/D seed from this district showed a purity of more than 80 per cent., while 85 per cent. reached the minimum certification standard of 70 per cent.

An attempt to explain these differences leads to this line of reasoning. In comparison with other districts, the seed-growing areas of Akaroa are hilly, containing sunny and shaded faces, and generally are of a nature to create uneven ripening conditions. There might, therefore, be expected a higher percentage of immature seeds and more unevenness in the seed harvested.

Of the other districts, the Ashburton County has been longest established as a seed-producing area, and accordingly the areas themselves have, in general, been under cocksfoot seed production for longer periods than the areas in North and South Canterbury, Otago, and Southland.

Two Lines Of Thought

Thus, we have emerging two lines of thought:—

(1) That evenness of ripening is an essential pre-requisite to high purity in the machine-dressed seed sample.

(2) That older established stands might tend to produce seed of lower purity.

This article is not intended to be a treatise on the production of cocksfoot seed. There are many other factors which must be considered in this connection, the chief of which might be summarised as follows:—Suitability of district for seed production; establishment of the area; management for seed production, including the pros and cons of topdressing and of grazing; and actual harvesting methods.

The aim of the writer is to focus attention on the general low purity of cocksfoot seed grown in New Zealand, but also to point out that from district to district there are variations in the degrees of purity sufficiently great to be considered of high significance.

If the first line of thought referred to above is borne out in practice—and there is every reason to presume that it is—then the aim of all cocksfoot seed producers should be to utilise only the most uniform of paddocks for the saving of cocksfoot seed.

On the second hypothesis some further comment is necessary. A considerable proportion of the areas in the districts other than Akaroa and the Ashburton County have been sown with seed of the "C23" strain—a selection made by Lincoln College from Akaroa-grown cocksfoot having a finer and more even leaf growth, and a higher production capacity than the "natural" strain. It may be, therefore, that the superiority in respect to purity of the seed harvested from these districts is due to the fact that either the areas have been more recently sown, or that the "C23" or "Pedigree" strain is also superior in regard to the quality of the seed produced, or to a combination of these factors.

Be that as it may, the alternative suggestions advanced in no way detract from the value of the lesson to be learnt. The United Kingdom is asking for considerably greater quantities of cocksfoot seed, preferably of a higher purity than that at present being

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forwarded from New Zealand. The evidence submitted herein strongly suggests that the latter requirement can to a large extent, be met, and in its meeting the former requirement would also be fulfilled.

Long-term Improvement

There seems no likelihood that these requirements can be met forthwith, as the specialised nature of cocksfoot seed production precludes the possibility of any tremendous stepping up in one season of the acreage to be harvested. On the other hand, the United Kingdom will still require cocksfoot seed when this present urgent demand has passed.

What cannot be done today might well be undertaken as soon as possible.

A rapid extension in the acreage devoted to cocksfoot seed production on land which will mature the seed as evenly as possible should, in a reasonably short time, give effect to the twofold request for "more seed of higher purity." The farmer who desires to extend production in this direction may safely use Certified Mother cocksfoot seed for the establishment of a seed-producing area of a desirable type of cocksfoot. Should his preferences lean to seed of pedigree strain, then he can be recommended to sow Certified Pedigree cocksfoot seed in the assurance that he is not sacrificing purity in the seed he produces, while at the same time he is furthering the use of seed of superior strain.

No reference has yet been made in this article to the ryegrass-content of lines of cocksfoot seed, as this subject falls outside the particular field of the inert matter present. A note of warning should be sounded in this connection, however, to those who propose to establish cocksfoot seed areas. Ryegrass seed in a line of cocksfoot is considered very deleterious, and is virtually impossible to remove. In selecting seed for the purpose just mentioned, therefore, care should be taken to see that the line is as free as possible from ryegrass seed, while the area to be sown should be cleaned of volunteer ryegrass. With care in this direction, plus proper management of the established area, risk of ryegrass impurity in the seed harvested is reduced to a minimum.

Artificial Insemination

DURING the year ended March 31 last experiments were conducted at Ruakura in which artificial insemination was used entirely in one herd of sixty-nine cows. These were divided into two sections, in one of which precautions only possible under laboratory conditions were taken, while in the other section the conditions were made to simulate those likely to occur in commercial dairies.

The following results were obtained: In the first section 62 per cent. of the cows conceived to the first service and a further 14 per cent. to the second service. In the second section 41 per cent. of the cows conceived to the first service and a further 25 per cent. to the second service. These results indicate that artificial insemination can be successfully used under the peculiar conditions which occur in New Zealand. The work is being continued this year, when it is hoped that the figures obtained under ordinary field conditions can be somewhat improved.

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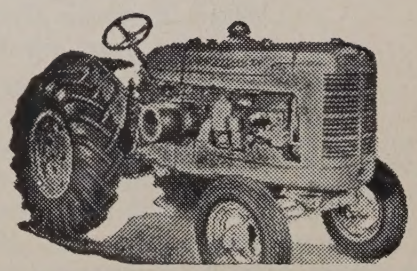

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Animal Manure Is An Important Fertiliser

Fifteen million tons of animal manure are estimated to be spread on paddocks throughout New Zealand every year by dairy cows alone. A plea is made for greater utilisation of this manure, which is a powerful counter to fertiliser rationing.

Above.—Deposited cow droppings—a potential medium for pasture improvement.

Left.—Harrowing independently.

Efficient Distribution Is Essential To Prevent Sward Deterioration

THE restricted use of artificial fertilisers of necessity opens up new avenues of exploitation for the maintenance and promotion of production. Attention to a more judicious use of fertilisers themselves, a fuller use of the crops produced, coupled with an intensification of the farm's natural resources, are all potent factors now receiving consideration.

Any counters to fertiliser rationing are of vital importance, and it is intended to focus attention on the potentialities of animal manure. On dairy farms in general—and in particular the more densely populated cow areas—the importance of adequately distributing animal droppings deserves much greater consideration, both from an added fertiliser value and as a prevention of sward deterioration and weed establishment. More often than not, the distribution of droppings is a neglected phase of pasture management, in that it is an exception rather than the rule to find a dairy pasture which does not reveal considerable wastage in utilisation of stock droppings.

By

J. E. DAVIES,
Instructor in Agriculture,
Hawera.

Valuable Quantities Available

In countries where animals are housed for a lengthy period of the year the amount of farmyard manure produced reaches enormous proportions; so much so that it becomes a basis of the manuring programme, but it is only in comparatively recent years that attention has been focused on the value of animal droppings produced under open grazing conditions.

The tonnage produced under these conditions is more than might be supposed. It has been estimated that about 12 tons per cow each year are produced, which means that some 20 million tons are available in the Dominion each year from dairy cows alone. Furthermore, in the more intensified dairying centres, such as South Taranaki, carrying close on one cow to the acre, it means that approximately 12 tons per acre are available annually. It has also been estimated that of the 12 tons produced per cow, 9 tons are deposited on the paddocks and the remaining 3 tons in the cowshed and holding yards. The significance of the latter amount, which totals some 5 million tons for the Dominion, has been ably featured in an article on "Liquid Manure" by G. A. Blake, in the July, 1941, issue of the "Journal." In this article the former "paddock deposits" are discussed.

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Undisturbed droppings cause sward damage. Note the rank, unpalatable grass growth around the edges, and the area destroyed.

Fifteen Million Tons

Out of 20 million tons of animal manure produced by dairy cows yearly within the Dominion, 15 million tons are deposited on the paddocks, and the value stored in this tonnage is of momentous importance. If it is undistributed, much wastage occurs, and, what is more, sward injury is likely to take place. On the other hand, if it is efficiently distributed it becomes a forceful factor in pasture improvement and consequently greatly increases production. Unlike liquid manure, it requires no installation of equipment for its preparation, and no carting out is required; it is there, on the spot, readily available—a valuable material waiting only to be distributed to cash in dividends.

The fertiliser value of animal manure is generally recognised, but it is well to be reminded again that, apart from their fertilising value, cow droppings must be scattered to prevent sward injury. If they are properly distributed, an improved, even, well-grazed sward will be built up; whereas, if the droppings are left undisturbed, the result is the growth of rank, unpalatable feed, particularly around the edges. This necessitates forced stock grazing, or, what is more often the case, the sward is left ungrazed, resulting in a patchy, uneven pasture growth accentuated by selective grazing. Further, the pasture immediately underlying the dung dropping itself is usually killed out, leaving an excellent medium for the establishment of weed seedlings.

A close-up view of the development of fog growth and the dropping itself presenting a medium for weed establishment.

The original sward is completely changed and replaced by a dense patch of fog, entirely devoid of legumes.

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Sward Injury and Weed Infestation

Even with artificial fertilisers, an even distribution is essential, for if it is allowed to heap on a portion of pasture the sward which is covered is destroyed. Similarly with cow droppings an overdose on the one spot causes the same damage, but it is well to mention that the material itself provides a more suitable medium for the establishment of weed growth.

Any disease affecting a root crop, suppressing its growth and reducing its yield, is usually dealt with promptly to check its spread and recurrence. It is somewhat strange, however, that the major crop—"grass"—is often more suppressed in its growth and its yield reduced by the effects of undistributed droppings without any undue concern being shown or any specific prevention methods being taken. This only goes to prove that the potentialities of the grass crop are not fully appreciated, and that the significance of utilising cow droppings is not fully realised.

Dairy pastures which are insufficiently harrowed soon produce patchy, uneven swards, and this undesirable feature is the direct result of undistributed cow droppings. Inferior patches are brought about mainly by undistributed droppings, killing out useful plant species, which are replaced by the establishment of inferior types. Usually, these patches are dominantly fog and sweet vernal, with little or no clover present. It requires little imagination, therefore, to see that these inferior plants are allowed to grow up "ungrazed" as surplus pasture growth during the summer months, and are allowed freedom of prolific seeding over the hard-grazed, unseeding good species. This heavy seeding of undesirable types finds easy reproduction in the medium provided by unscattered droppings, and so the cycle goes on.

Efficient Harrowing

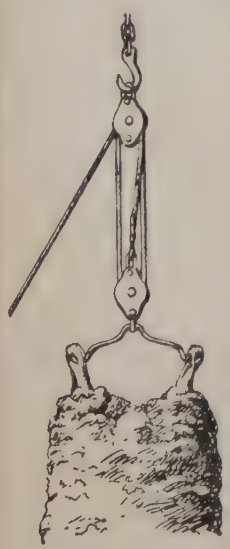
Pasture harrowing is highly controversial, and the type of harrow to use, the degree of penetration, and the time to harrow are constant topics of discussion. Whatever the opinions held, however, one thing is certain—a harrow capable of efficiently distributing animal droppings, particularly on a dairy farm, is one of the first essentials. Too often, pasture harrowing tends to become orthodox, in that pastures are given a heavy harrowing during the winter months as "clean up" in preparation for topdressing and the coming spring growth, and are then left unharrowed until the following winter, the spring and summer harrowing being entirely neglected.

The question therefore arises, when should harrowing be done? My reply would be: Whenever animal droppings require to be distributed. During winter months the spreading of animal droppings presents no difficulties; pastures are bare, grass pollution is not of such consequence, and the droppings are in a suitable condition for distribution. In the spring and summer months fresh droppings tend to be wet and sloppy, making distribution more difficult, with a possibility of polluting the pasture itself.

For efficient distribution two extremes should be avoided—that is, harrowing when the droppings are too hard or too soft. Harrowing should therefore be done when the bulk of droppings in the paddock are in the best breaking-up stage, and experience here is the guiding factor. During the spring months it is often inadvisable to harrow immediately a paddock has been grazed, and a delay of a few days may be necessary because of sloppy droppings. On the other hand, during late summer and autumn the reverse is necessary. Harrowing should be done immediately the paddocks are grazed and before the dropping become dried up and hard. If harrowing is deferred, care must be taken to ensure that grass growth is not such that the harrowing will cause pollution and mutilation, adversely affecting the next grazing. Harrowing should be done before any appreciable growth takes place, and while conditions may not always prove ideal, the best opportunity between the condition of the droppings and that of grass growth should be seized upon.

Conclusion

It is estimated that from dairy cows alone some 20 million tons of animal manure are produced annually within the Dominion, 15 million tons of which are deposited in the paddock. The wastage which occurs is enormous, and the importance of a greater utilisation of such valuable supplies cannot be over-emphasised. Animal manure is a powerful force in the control of production, and its significance as a "counter" to fertiliser rationing deserves special attention.



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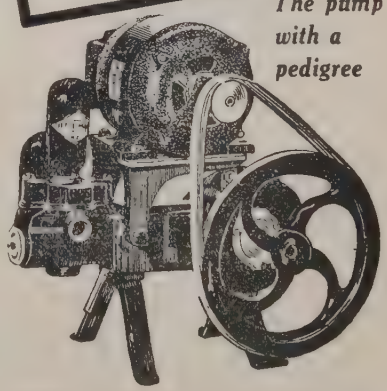

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Most farmers have at one time or another suffered losses through some of their stock being poisoned, and in many instances the source of the trouble seems shrouded in mystery. Nevertheless, it is important to discover the real cause and take steps to prevent further loss, and this article discusses some of the more common poisonings and the conditions under which trouble will arise.

POISONINGS OF LIVESTOCK

By
D. MARSHALL,
District Superintendent,
Livestock Division, Wellington.

COMPREHENSIVE and authoritative articles on the poisonous plants of New Zealand by Mr. B. C. Aston, formerly Chief Chemist of the Department of Agriculture, were published in the "Journal" in 1918 and 1923, and from time to time other short articles have appeared. The purpose of the present notes is to review the more common poisonings seen in stock, and previous publications will be borrowed from without compunction.

Field diagnosis of poisoning in stock is not always a simple matter. Stock owners are apt to suspect poisoning whenever an animal dies suddenly. On the other hand, cases of poisoning have occurred where the real cause was not at first suspected. As treatment is in many cases of no moment, the animals being dead or dying when discovered, it becomes the more important to discover the real cause and take steps to prevent further loss.

In most cases of acute poisoning several animals are affected at once. For instance, in salt poisoning in pigs, due to excess salt in the feed, several sick and dead pigs may be found on the morning following the eating of the food implicated.

Conditions under which poisoning occurs may be a guide, and are: Access of cattle, particularly calves, to rubbish heaps; the vicinity of sheep dips or new buildings or of stock to old gardens and shrubberies or hedge clippings. Accidental inclusion of poisonous material in standard food stuff may occur.

Poisonous Plants

Certain plants appear to be poisonous only under certain conditions, and as at certain stages of the plant growth, such as sprouting potatoes, or when stock are hungry and eat them in excess. Hungry animals may eat plants which ordinarily they avoid. Confirmation of poisoning by chemical analysis of stomach contents or certain organs can be obtained with the inorganic poisons, such as lead and arsenic. With many plant poisons, however, this is difficult or impossible, and confirmation must be based on discovery of leaves, etc., of the plant in the stomachs. Because of the expensive and time-consuming nature of the work, analysis for poisons is not undertaken by the Department in cases of single deaths, but only where several deaths have occurred.

Determination of whether certain plants are, or are not, poisonous may sometimes involve years of patient work, and a classical example is that of ragwort. The substances most commonly causing stock poisoning include inorganic poisons, such as arsenic, lead, zinc, caustic soda or caustic potash, and common salt; and plants, native or introduced, such as ragwort, tutu, hemlock, rangiora, rhododendron, and certain buttercups. There is a much longer list of plants concerning which either the evidence of their poisonous nature is still incomplete, or, though known to be toxic, instances of poisoning due to them are too rare to render them important. This includes black nightshade, goats rue, privet, mangels (under certain conditions), bracken fern, and strathmore weed.

Arsenic

Poisoning from arsenic is usually acute, and deaths are rapid. In one

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instance, four cows died through eating blackberry sprayed with a weed-killer. In another case, two cows were seen dead and three others very sick through having licked and grazed round a leaking drum of weed-killer. The symptoms were marked depression, weakness, staggering, and evidence of severe abdominal pain. On post-mortem examination the fourth stomach lining was found acutely inflamed. Twelve pigs were found dead one morning and several others sick.

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Arsenic was recovered from the carcasses, and later found to be present in the remains of the boiled feed fed the previous afternoon. There was no evidence as to how the arsenic got into the feed.

In an article on arsenical poisoning in the "Journal" for November, 1936, C. V. Dayus describes cases of poisoning in horses through careless contamination of the water supply and also through the application to the skin of arsenical sheep dip solutions to kill lice. The danger of this latter proceeding is stressed. Poisoning may occur through the application of strong arsenical solutions to wounds, or to foot-rot cases. In Britain it has occurred from the contamination of pastures through turning out newly-dipped sheep insufficiently drained.

As weed-killers and arsenical sheep and cattle dips are the two most likely causes of stock poisoning with arsenic, care is required in using them. Stock should not have access to recently sprayed weeds, and should be kept away from the vicinity of dips. All tins, packets, and other containers should be kept in a safe place and properly disposed of when empty. Dips should be mixed according to the manufacturer's instructions, and used only as recommended.

Lead

The main source of lead poisoning in this country is paint containing red lead or white lead. Animals have access to this chiefly in discarded tins about rubbish dumps, but cases have been caused through the stock chewing painted articles, such as scraps of old tarpaulins, or through paint dripping on to grass round newly-painted gates or buildings. The chief and almost the only sufferers are cattle, particularly calves, which have a habit of poking into odd corners around shed or plantations where paint tins may have been thrown out perhaps years previously. Birds are susceptible, and some years ago a number of parrots were poisoned in the Edinburgh Zoological Gardens through climbing on the newly-painted wirenetting of their enclosure.

Lead poisoning should be suspected where fairly sudden deaths of calves occur, as it is rather common in these animals. The symptoms which may be noted are excitement, bellowing, aimless rushing about, followed by depression. Cases may occasionally be put down to blackleg, or vice versa, but the characteristic swelling of a shoulder or quarter is absent. In one case where lead poisoning of calves was suspected there was at first sight no indication that they could have got at any lead, but further search revealed a small gap in the run fence leading to a waste area and a rubbish heap, in which was a tin still containing paint and with signs that it had recently been licked. Epsom salts in repeated small doses is of some value as an antidote.

Zinc

While very rare instances of poisoning due to the giving of zinc sulphate medicinally in mistake for Epsom salts, which it strongly resembles, have been recorded, the most common type of poisoning in this country, and one seemingly peculiar to New Zealand occurs in pigs. This has been previously dealt with quite fully in the "Journal" for July, 1936, and for April, 1937. Briefly, this form of poisoning occurs where pigs are fed dairy by-products per medium of galvanised pipe lines. Small residues of the whey, skim-milk, or butter-milk sour in the pipes, and the lactic acid dissolves some of the zinc present in the galvanising. The trouble is likely after the installation of new galvanised piping for by-products, especially if the pipeline is of considerable length. After a variable period of six to eight months or so, all the readily soluble zinc is removed.

The symptoms shown are, at first, slight stiffness and lameness, and later, unthriftiness, loss of condition, and death. Death may occur from secondary conditions, such as pneumonia, which may mask the true cause. In the early stages recovery will follow discontinuance of the zinc contamination of the food by avoiding use of the pipeline.

Prevention would require the use of plain iron pipes or thorough flushing of the pipeline system with molasses and water after every occasion it is used, which is not always practicable.

Sodium Chloride (Common Salt)

Salt is an essential element in the food of animals, but when absorbed in excess or in too great a concentration it may cause poisoning. Pigs, calves, sheep, and poultry are the chief sufferers. In the pig, occasional outbreaks of poisoning have occurred through excess salt in whey. In some cheese factories it was formerly the practice to run off into the whey vat a quantity of very salt whey resulting from salting of the curd. At a later stage this was highly diluted by the addition of sweet or unsalted whey, and in this

form was quite safe. It has happened that at a holiday period, when the staff duties were altered or hour of whey collection changed, a supplier has been given his quota of whey from the undiluted salt whey. Nowadays, most factories dispose of this otherwise.

Pigs would at first refuse this salt whey, but would take it later when hungry. The symptoms noticed were dullness and stupor and the animal either stood with its head pushed against a gate or wandered about aimlessly. Later, there were muscular twitchings, followed by coma and death. Sows and large pigs might not be noticeably affected, but in some outbreaks the death-rate was high. Changes in the organs were found on post-mortem to be slight and indefinite, the gastritis described in text books being lacking.

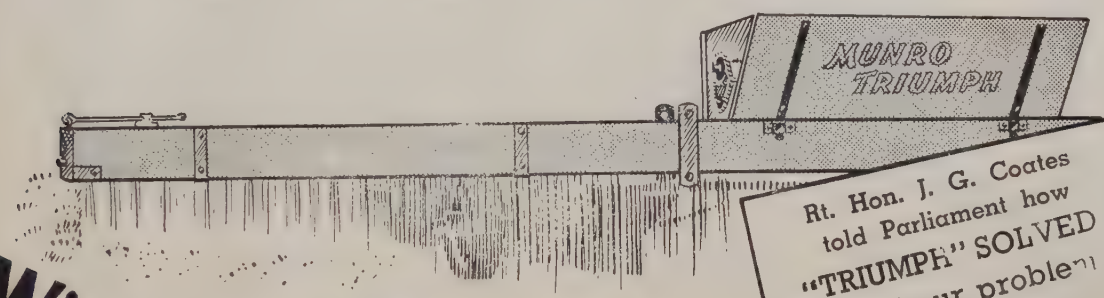
Poisoning in pigs has been observed resulting from the drinking of rain water accumulated in a concrete lock trough containing salt lick. The conditions under which poisoning may occur and the amount of salt necessary to produce it are hard to determine.

In a small experiment carried out some years ago in conjunction with Mr. Udy, Chief Chemist of the New Zealand Co-op. Dairy Company, at Hamilton, three pigs were fed increasing amounts of salt over a period of five weeks. The salt was added to whey and given every second day. At the final feeding the pigs, which then weighed 85lb., 85lb., and 59lb., were fed among them 1lb. of salt in 10 gallons whey. Analysis showed 1 per cent. of salt; the pigs remained healthy. The smallest pig was later given 8oz. of salt in 4 gallons whey, analysis showing 1.5 per cent. of salt; the pig did not drink for some hours. During the next two days it became dull, and on the third day was down, comatose and twitching, and was destroyed. Post-mortem examination in this case showed slight gastritis.

It was concluded that concentration of salt over 1 per cent. was approaching the danger point. As against this, an American veterinarian had recently claimed good results in the treatment of a form of dysentery in pigs by giving a 2 per cent. mixture of salt in butter-milk. Of the 20 herds treated, symptoms of salt poisoning occurred in one only.

In the "Journal of Agriculture" (November, 1939) an account was given of salt poisoning in calves through over-consumption of lick. The symptoms were unthriftiness and scouring, and several died. Clough, in a review of salt poisoning (Veterinary Record 14/12/29), describes several cases of poisoning of poultry from excess salt in the mash, and gives the poisonous dose as about ½oz. for a 4lb. hen. He refers also to poisoning in cattle whose only water supply contained 1.6 per cent. of salt.

It is hoped to discuss some of the common plant poisons in a later article.



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Seed Testing Station Is The Backbone of the Seed Trade

— By "ASTED" —

MUCH of New Zealand's progress and prosperity as a pastoral country depends upon a stable and reliable supply of seed of known quality, and it is largely through the operations of the Seed-Testing Station of the Department of Agriculture at Palmerston North that this has been secured. Outside the seed-producing areas, the Seed-Testing Station is little known among the farming community —it works behind the scene—but its work is of immeasurable value.

IN New Zealand, practically the whole of the agricultural seed purchased by the merchants from growers, traded in the wholesale markets, exported or retailed, is priced and traded on certificates of analysis issued by the Station. For this reason, although the Station is officially administered, its services have come to be accepted as a phase of the seed industry itself, enabling it, with the co-operation of most merchants, to exercise an influence in the direction of an improvement in the knowledge and appreciation of quality in seeds.

Although it is not generally recognised, this has brought about changes in seed trading methods, and has not been without an educative effect on the personnel of the trade, both of which circumstances have resulted in a profound improvement in the quality of seed exported and sold for domestic use.

Merchants' Viewpoint

Here is what the manager of a large seed trading firm says of the work of the Seed-Testing Station:—

"A certificate from the Seed-Testing Station is an insurance policy to the farmer that he will get first-class seed. Farmers should never consider buying any seed until the certificate of purity and germination is quoted, because if the percentages are not stated it is more or less an inference that the standard is too low for the figures to be produced.

"From the merchant's point of view, the basis of sale or purchase is determined by purity and germination. A merchant cannot buy on appearance. Colour and weight are no indication of the quality of the seed. The only alternative is a test. It would be useless for a commercial firm to establish a seed-testing station, as their certificate would carry no weight, but a Government-controlled testing station is impartial, and documentary evidence can be obtained of an independent test. As between merchants, a Seed-Testing Station certificate is a first and final law."

Although pure seed is obviously of such importance to farming, little is generally known of how supplies of this vital commodity are safeguarded. The position is succinctly summed up by the Officer-in-Charge of the Seed-Testing Station, Mr. Nelson R. Foy, in a specially prepared article on the seed trade.

"In almost every phase of agriculture, it is upon seeds that man relies for the renewal of crops and pastures, and upon the quality of these seeds depends in no small measure the ultimate return that he receives for his labour," he says.

HOW SEED IS TESTED

The seed is harvested. A header-harvester with pick-up attachment harvests a field of ryegrass.

A sample of the seed is received at the Seed-Testing Station. Some 26,000 samples are dealt with by the station every year.

The actual testing begins. The sample is weighed and sorted by these young women assistants in the main laboratory.

"Furthermore, the problem of making the best use of the earth's seed supply so that agriculture may be supplied with pure, viable seed of known variety, is a fundamental one, yet it seems one of the last to receive the world's most thoughtful attention. Only of recent years has there been recognition of the demand for organisation in dealing with this, the most vital and universal of agricultural supplies.

Cosmopolitan Commodity

"Of all trade commodities, agricultural seed is probably the most cosmopolitan, for it is difficult to conceive of any other material in which there is so much movement between the various countries of the world, or any trade which is more complex in its activities. Furthermore, this trade is fundamentally different from any other, in that the product does not usually go into consumption in the ordinary sense of the term, but is used to produce a more or less permanent medium of human food production through the grazing animal, or—and this is perhaps even more significant—to reproduce its own kind, which produce may quite conceivably come into competition with that from the original parental sources.

"All these circumstances arise out of the fact that agricultural seed is not a completed product or raw material to be converted into such, but is composed of living units, its commercial and agricultural value being based on a measured ability to produce plants of the requisite species and of the requisite type.

Need for Control

"Today, the marketing of agricultural seeds demands not only trade

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But my own experience has proven that BLACK LEAF 40 (Nicotine Sulphate) and BLUESTONE is one of the most Efficient, Economical and Safe Worm Drenches obtainable.

I say BLACK LEAF 40 because it is the standard 40 per cent. Nicotine Sulphate. Its strength never varies.

Supplies obtainable from your local Stock and Station Agent, Merchant, or Storekeeper.

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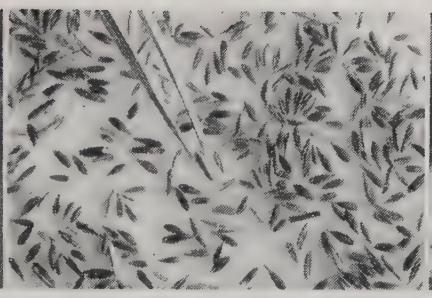
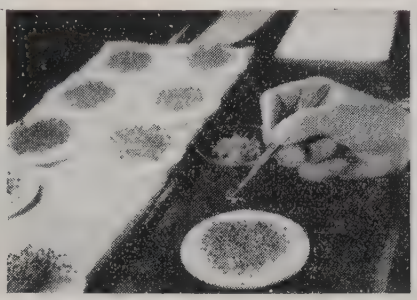
Delicate balances are used to weigh seed and impurities. The percentage by weight of the pure seed is used to express the purity of the line.



This close-up shows the removal of a Californian thistle seed from crested dogstail.

The true seeds are counted into three groups, each of 100 seeds, and placed on moist paper discs.

The seeds on the moist trays are placed in germinators, where the temperature is controlled.



After a period of one to three weeks, the percentage germination is ascertained by counting the healthy seedlings.

The tests completed, the Certificate of Purity and Germination is issued.

integrity of the highest order, but also the exercise of considerable technical knowledge and skill, and, unfortunately, it has to be admitted that to some degree in all countries seed is still handled by vendors who are in no sense of the term 'seedsmen,' and who can pretend to no knowledge of seeds, their evaluation, or of the interpretation of analytical or varietal data. Hence the need almost throughout the world for various enactments to control in some way the sale and distribution of agricultural seed.

"It is true that with the advancement of agricultural practice, particularly in respect of grasslands, seedsmen are becoming specialists, in many cases in spite of themselves. and with this advance the purely commercial speculator is being relegated more and more into the discard. This specialisation has become particularly noticeable in New Zealand and Australia during recent years, and can be associated with the institution of strain certification schemes, and in New Zealand particularly with a characteristic feature, the almost entire voluntary reliance of the established trade on the percentage of purity and germination. It will be admitted generally, I think, that this technical bias is in the best interests, not only of the members of the trade themselves, but also of the country's agricultural industry.

"It also accounts in part for the absence in New Zealand of legislation governing the sale of seed to farmers. As, however, seed of known quality, priced according to quality, is available in all centres of the Dominion, the absolute necessity for such legislation has become apparent only through the unwise and costly patronage by farmers of vendors of ready mixed seed and straight lines of unknown quality and pedigree."

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Effect on Export Trade

The seed export trade, amounting in value to about £500,000 per annum, is operated entirely on the Station's test certificates, which are used not only as a basis of cabled quotation, but also accompanying shipping documents in support of sale specification as a guarantee of good faith in delivery, and quite commonly to support draft payments.

The Station also advises New Zealand shippers in respect of possible compliance of export lines with the Importation Acts and regulations administered in the country of destination. These services, requiring special analyses, are extending rapidly, more especially as seed is now being exported in increasing quantity by New Zealand to replace, at least in part, the large importation from Europe by Great Britain and North America before the war.

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I am interested in your Automatic Pressure Pumps. Send me by return full details and illustrated literature.

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How Seeds Are Tested

The testing of seeds is a skilled operation, requiring the services of a staff specially trained in accordance with methods prescribed by the International Seed-Testing Association. The membership of this organisation is confined to approved official Stations throughout the world, its primary objective being uniformity in testing methods. To facilitate commerce in seed, it is important that a certificate of analysis accompanying seed passing from one country to another can be correctly interpreted and be directly comparable with those issued for the same seed in the importing country.

Although the services provided by a seed station are many and varied, those of primary importance concern purity, germination, and also, in New Zealand, strain and type.

To describe in detail the process of any of these tests in this article would necessitate prolonged and involved descriptions. It is intended, therefore, to outline briefly the services provided by the New Zealand Station in sufficient detail only to provide an elementary appreciation of the work.

The 26,000 odd samples received every year require the undertaking of more than 50,000 separate tests. By far the greater part of these samples represent seed held in store in bulk, and sampled either by the merchants themselves or by officers of the Department of Agriculture for the purposes of official seed certification and testing on behalf of the owners of the seed.

In all cases the sender intimates what tests are desired, and in due course one or more certificates are issued.

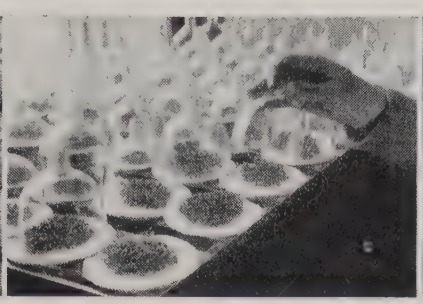
Very much in the background of the Station's activities is a complex recording system, which not only guides each sample through the various phases of testing, but also enables the frequently required back reference to be made to sample and test results for a period of years.

Purity Test

The purity test—or, more correctly, the purity analysis—provides a description of the make-up of the sample, how much pure seed, other crop seed, weed seed, and inert matter is present. On this information depends to a very large extent the monetary and sowing value of the line. The most frequently used is the percentage of pure seed, or, more commonly, "the purity."

HOW RYEGRASS AND WHITE CLOVER ARE CERTIFIED

A sample is drawn from a line of seed entered for certification.



At the Station the seed is tested, as previously described, for purity and germination.

In determining the strain of white clover, paper treated with picric acid is placed in a test tube containing seedlings.

In distinguishing between perennial ryegrass and inferior annual strains, the seedlings are placed under ultra-violet rays.

A high percentage of Italian ryegrass seedlings, and varying proportions of false perennial ryegrass seedlings, exhibit a brilliant blue florescence at the root. The percentage of similar seedlings in true perennial ryegrass is very low.

The hall-mark of quality. A sack of seed receiving the official certification seal.

This is expressed, as are the other three separations, as a percentage of weight, and means simply that a purchaser of cocksfoot of 75 per cent. purity receives approximately 75 lb. of pure cocksfoot seed in every 100 lb. delivered.

The next two separations, other crop seed and weed seed, are self-descriptive, but of the two the last-named is generally more significant. The inert matter separation is of particular interest and value to the merchant and seed-cleaner, but to the farmer is of significance only in so far as it is re-

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sponsible for a reduction in the percentage of pure seed.

Few farmers would have to be told what constitutes a weed, many could hazard a guess as to what it costs them to keep weeds suppressed on their farm. Probably no one could even guess the amount of the reduction in the national income through the competitive effect of weeds. Yet it is true that most of our pernicious weeds have been distributed in cheap, low-grade seed.

Although mechanical ingenuity has reached high levels in devising means of removing seed impurities in the process of dressing, most lines of grass and clover seed contain some weed seed, usually of a harmless nature.

It is a fact, however, that much of the seed tested is of low purity and that some lines contain weed impurities in significant quantity. Some of these find their way on to retail markets, especially in the more isolated districts, the very worst of them for obvious reasons being unsupported by statements of analysis.

It is obvious that, quite apart from its accepted use in trade descriptions of quality, the purity analysis has over the years played a definite part in the raising of standards of seed dressing and, through this, the quality of seed made available to farmer buyers.

At the Seed-Testing Station the weed seed content is recorded for every sample examined for purity, and in some instances special tests have to be made for positive identification.

The method of identifying wild turnip in root seed samples is a case in point, where portion of the seed coats of all suspected seeds are removed and chemically treated. A red coloration in the tissues positively establishes the identity of wild turnip, a weed which is becoming increasingly common in root crops.

Germination Test

The germination test or the measure of the ability of seed to produce plants is directly associated with the purity test as an expression of quality. The pure seed separated in the purity analysis is used for this test so that the quoted "germination" does not apply to the bulk as delivered—only to the pure seed contained in it.

The test results are expressed as a percentage by count; that is, seeds per hundred which will grow.

It will be clear that neither of these percentages used alone fully describes the quality of a line, and there is, therefore, reported on the certificate the "percentage of pure living seed." This means simply the germination capacity by weight of the bulk as delivered. For instance, the germinating pure living seed of a line of cocksfoot is reported as 63 per cent.*; this indicates that in 100 lb. of seed delivered 63 lb. can be expected to grow.

On the certificates also are two germination percentages—one, the "interim," giving a growth percentage in a short period of days, and the other, the "final," giving the growth in the complete test period. The first-named provides an indication of the viability of the seed, and there should be only a narrow margin between this and the final test. Vitality or energy in seed is important, as upon it depends the speed of growth and establishment and ability of the emerging plant to withstand unfavourable conditions or weed competition.

The question is often asked, especially in respect of perennial ryegrass of low germination: "Is it a fact that seeds which will not grow in a germinator are acted upon by 'something' in the soil, and thereby caused

*Formula:

$$\frac{\text{Purity} \times \text{Germination}}{100} = \text{Pure living seed}$$

when

Purity: 70% Germ.: 90% Pure living seed $= \frac{70 \times 90}{100}$ = 63%.

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to germinate?" There is, however, definitely nothing in this claim, and, as a general rule, because of the very unfavourable conditions under which seed is germinated artificially, the actual result in the field is slightly lower than the reported test percentage.

It is surprising how many growers of low-germinating seed sow their own seed and obtain strikes "like hair on a cat's back." It is equally surprising how few of the same growers will accept someone else's low germinating ryegrass "for the price of the sacks."

Tests for Strain Or Type

Equally as important as purity and germination are the two special tests used to determine plant type in ryegrass and white clover. The practical use of the ultra-violet light test for perennial ryegrass and the picric acid test for white clover may be claimed to have been instituted at the New Zealand Seed-Testing Station, and today more extensive use is made of these in New Zealand than at any other Station in the world.

The ultra-violet test is based on a distinctive characteristic of the production of a fluorescent substance in the roots of annual or hybrid-annual ryegrass seedlings.

When the eight-day seedlings, rooted on paper pulp, are examined in ultra-violet light, the appearance of a pale blue glow along the roots enables a count to be taken and an estimation made of the degree of inheritance by the line of seed of annual characteristics. From this information it is possible to classify ryegrass as true perennial, or false or hybrid perennial.

In New Zealand the test is applied mainly to the official certification of perennial ryegrass in the permanent pasture class. A service is also provided whereby growers and merchants may obtain an indication of the chances of lines conforming to certification standards, and for farmers alone a report on the type of ryegrass representing seed which they propose to sow.

The second test, the picric acid test for white clover, is applied in exactly the same way as is the ultra-violet light test for ryegrass.

SUBSCRIPTION RATES.

The *Journal* is issued monthly. The subscription within New Zealand, which is payable in advance and includes postage, is 2s. 6d. a year. The overseas subscription is 5s. Subscriptions should be forwarded or paid direct to any office of the Department of Agriculture in the Dominion. Single copies, price 6d., are available from the Department of Agriculture, Box 3004, Wellington.

The basis of the classification of superior and inferior types is, however, quite different.

The fact that superior types of white clover contain certain chemical substances which are absent in the inferior types makes it possible to apply the standard test for the presence of the substances—the picric acid test—and on the reaction obtained depends the type classification of the seed and whether it is accepted or rejected as certified seed.

Ryegrass Seed Disease

Another activity which occupies the attention of the Seed-Testing Station during a short season each year is the examination of ryegrass seed crops for disease. This service is of great value to the seed-grower, for it enables him to avoid harvesting those crops which have been made unprofitable by the ravages of the fungus disease of ryegrass seed. This disease kills the seeds which it attacks, and thus reduces the germinating capacity of the crop. Samples from seed crops are examined microscopically at the Seed-Testing Station. The grower is then informed of the extent to which his crop has suffered, and he can avoid harvesting seed crops which, when germinated, would prove to be of little value.

Other Activities

In addition to these major services, the Station advises in all matters pertaining to seed, and farmers may feel perfectly free to forward samples upon which an opinion is desired as to value or usefulness of seed intended for sowing. For this service there are no charges.

There are also activities concerning the storage and marketing of seeds, all of which play their part in assisting in raising the standard of the seed consumed in New Zealand, and in placing the Dominion in the position of one of the foremost seed-producing countries of the world.

Separately operated from the testing services, but making extensive use of them, is the Government Seeds Purchasing Office, an important section of the Seed-Testing Station. The whole of the seed used by the State is purchased by this section, making it one of the largest seed buyers in the Dominion, and enabling the Station to maintain close contact with commercial interests—a by no means unimportant phase of its activities.

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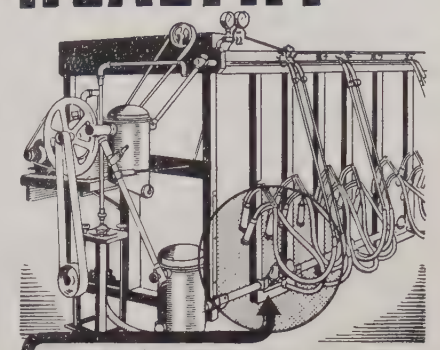

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THE Director-General's PAGE

Conservation of Petrol

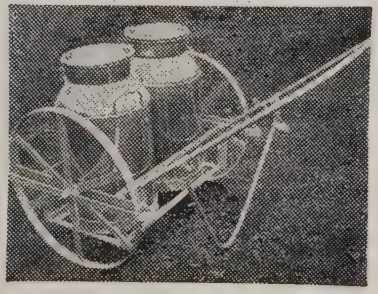
AS the result of substantial reductions in petrol allocations to field officers of the Department of Agriculture, it has been necessary to reduce field services to an absolute minimum. Priority is being given to activities connected with the war effort. Farmers will realise that petrol supplies must be rigidly conserved, and one feels confident that they will co-operate with departmental officers in ensuring that not a gallon is wasted.

UNDER the Fat Stock Disposal Order, 1941, producers must dispose of or process their export livestock through the same channels as they used last year. The purpose of the Order is to eliminate overlapping brought about by competition and thus reduce the consumption of petrol.

The Minister of Agriculture has requested dairy companies to overhaul all transport services, including cream collection, where other companies' services overlap, and to consider the provision of bulk milk collection services where such services would reduce consumption as compared with individual delivery. Individual suppliers who are now delivering their own milk in less than full loads are urged, wherever possible to endeavour to arrange joint carting with a neighbour or neighbours where by so doing petrol can be saved, and to do this on their own initiative and without waiting for anyone to call on them and request them to do so.

SOFT GROUND NOT DAMAGED

BY HANDY TRUCK



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Cobalt During the War

MOST farmers in the affected areas know that "bush-sickness" can be prevented by topdressing with cobaltised superphosphate. Unfortunately, the shortage of rock phosphate has complicated the situation. The Department has conducted experiments, which indicate that equally satisfactory results can be obtained when cobalt is applied to pasture mixed with superphosphate, serpentine superphosphate, lime and superphosphate mixed in different proportions, lime alone, sand, pumice, or dissolved in water. Farmers therefore need not hesitate to use any of the above, provided the right quantity of cobalt has been added.

Some farmers have adopted the practice of applying the reduced amount of fertiliser available to only a part of their pasture, this being topdressed at the old rate. This is not likely to prove satisfactory in controlling "bush-sickness." After topdressing, the cobalt-concentration in the pasture rises rapidly to a very high figure, and then gradually falls to the original low level, which is reached about six to nine months after topdressing. Where the sheep have received the benefit of the period of high cobalt-concentration, they can carry satisfactorily over a few months of low cobalt until the next topdressing. If only a part of the pasture is topdressed each year some sheep miss the high cobalt period in the topdressed section, and will then develop "bush-sickness" before the end of the year.

It is therefore important that at least 1 cwt. of some topdressing containing 6 lb. of cobalt sulphate per ton should be applied to each acre of pasture every year.

In the North Island best results will be obtained by applying in the autumn, while in the South Island the cobalt should be applied with the usual annual topdressing.

If the farmer wishes to use cobaltised lime or sand, which at present are not on the market, he can prepare his own supply by mixing 6 lb. of cobalt sulphate with 1 cwt. of the lime or sand and then mixing this with 19 cwt. of the same material. Mixing must be done very thoroughly, and it will be safer to prepare the required amount in several batches. This will ensure each paddock receiving a reasonable amount of cobalt, even if is not quite evenly distributed over the paddock.

If, for any reason, sufficient cobalt fertiliser cannot be obtained, cobalt lick should be used. This should be placed in all paddocks which have not been topdressed with cobaltised fertiliser during the current year. The lick should contain 1 oz. of cobalt sulphate in each 5 cwt. One hundred sheep need about 7 lb. of this lick per week. If only small amounts are required, 5 lb. bags of cobaltised salt can be obtained from the Department of Agriculture, and each of these should be mixed with 5 cwt. of salt. If not readily eaten, palatability can be increased by substituting 1 cwt. of linseed or similar meal for 1 cwt. of salt in the above formula. If large amounts of lick are required they should be purchased ready mixed from merchants, care being taken to specify that the lick contain the above proportion of cobalt. Licks should be kept dry by feeding them in the special weatherproof boxes.

If sheep refuse to take licks, the farmer may resort to the monthly drenching method described in the October "Journal." For this, 1 lb. of cobalt sulphate should be dissolved in 2 gallons of water (in the October "Journal" this was incorrectly printed as 1 lb. in 1 gallon of water). It is absolutely necessary to drench ewes as well as lambs, and the monthly dose should be half a fluid ounce in each case. As indicated in the article, monthly drenching should be regarded as an emergency method, and should be used only where topdressing is not available and licks are not readily taken.

Purchase and Canning of Boner Cow Beef

THE following conditions will apply throughout the North Island in respect of the purchase of boner cows and to the canning of the resultant boned beef for the season ending September 30, 1942:—

(1) The price paid by the Marketing Department for canned beef will be the same as for the 1940/41 contract and a subsidy will be paid on 12 oz. tins as in the past.

(2) Meat operators will purchase cows on a minimum basis of 15/6 per hundred lb. delivered at nearest port works.

(3) A railage pool will be established and operated by canners. This pool will receive the benefit of the savings in expenses to f.o.b. made by the freezing companies. The conditions of boning out, packing, preparation for delivery, etc., will be arranged by the meat canners with meat operators. The Department of Agriculture will give general oversight to this account.

(4) Meat canners will purchase from meat operators all boned meat on the basis of 2.787d. per lb. at meat canner plants. The cost of delivery, etc., is to be a charge against the pool operated by canners.

(5) The basis of purchase of boned meat, namely 2.77d. per lb., shall not be altered other than with the consent of the Primary Industries Controller, and any variations shall be dependent only on the value of extract and any production goods, services and/or labour which may show violent fluctuations during the currency of the contract.

(6) At their own works canners will, as far as possible, use the meat in a fresh state. Frozen meat from other works shall be drawn in as equitable a manner as is practicable.

(7) The Marketing Department will arrange to purchase from operators all boner cow beef held in store on the same basis as is agreed upon for other classes of meat—that is, payment at two and four months, or three months, whichever is finally agreed upon.

(8) Canning companies will purchase old season's cow beef (that is, cow beef from 1940/41 season's killings which was not included in the original 6,000-ton contract) on the same basis as laid down in paragraphs 3 and 4 above, except that the purchase will be from the Marketing Department, which will pay costs of transport from outside works to canning plants.

(9) The price in respect of old season's meat will be subject to the same fluctuation conditions as prescribed in paragraph 5.

(10) The Government reserves the right to cover its contingent liabilities for interest and storage on both raw and canned meat from any increased price which might be paid by the United Kingdom Government for canned beef. After this coverage has been effected any surplus will be reflected in price to canners, and in operators' schedule.

(11) The Government reserves the right to reopen the question of meat values when new canning plant is in operation.

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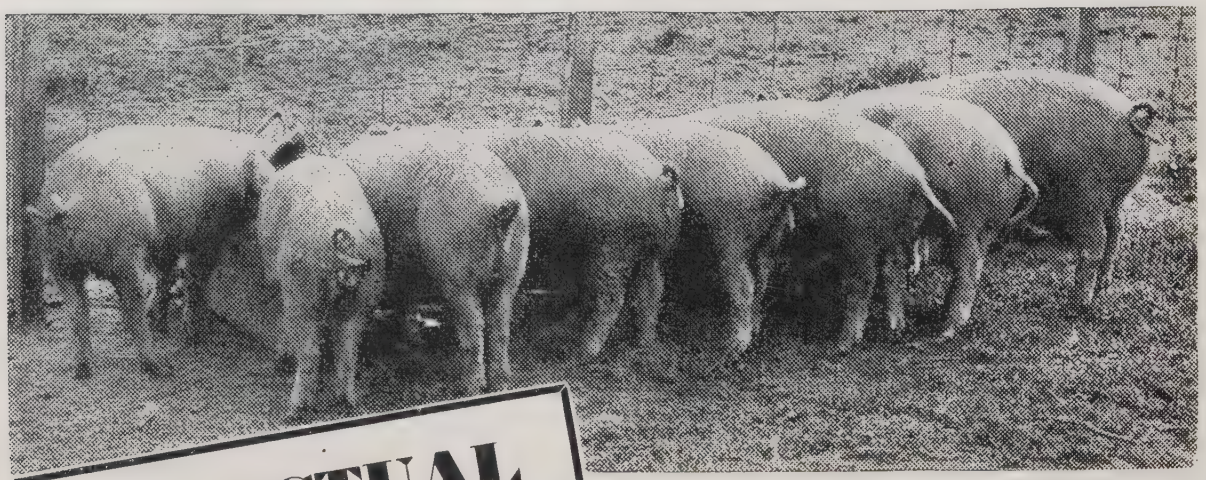

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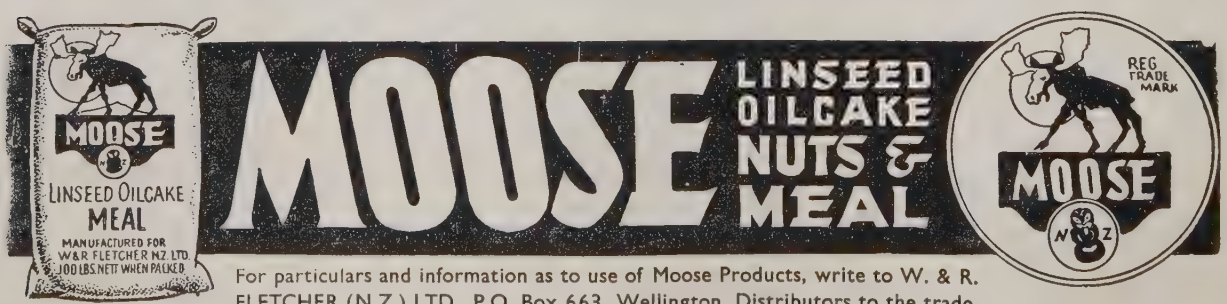

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Good Housing For Pigs Is A Savings Bank For Breeding And Feeding

This article is the basis of a broadcast talk on the subject prepared by the Supervisor of the Taranaki District Pig Council and approved for publication by the Superintendent of the Pig Industry, Livestock Division, Wellington.

Contributed by the
LIVESTOCK DIVISION

THE history of the development of pigs is well known to you all, and can be plainly read by the rising generation on some farm in almost any locality by a glance at the housing and accommodation provided there for pigs.

In case some of you don't care to read, let me tell you what you would see if you had the inclination and the time to profit by discovering the things you must not do again if you wish to make a success of pigs. Pigs were developed for the convenience of using dairy by-products, and were looked upon as a necessary evil. As time went on, less emphasis was placed on the "evil" and more emphasis on the "necessary." When "evil" was winning the less that was spent on pigs the better. A sty which kept the pigs confined, an accumulation of filth, and an unwillingness to go near the pigs were the highlights of the situation. You would find these circumstances even now somewhere in almost every locality. At that time there was at least one pig in every five classed as unexportable.

Change in Ideas

A change began to take place about 1928. Revolutionary ideas about running pigs outside, keeping them under sanitary conditions, having facilities you took a pride in, and pigs you were not ashamed of, became the new standards of pig production. Today, only one pig in twenty is unexportable. The old ideas about spending money on pig accommodation have died slowly. Distrustful of the consequences of building up-to-date equipment at once, farmers have improvised and tried out different kinds of houses and equipment. The stage has now been reached when most of the experimenting has been finished, and the temporary improvement, often now in disrepair, is due to be replaced with a more lasting, up-to-date, and proven lay-out which will put the pig equipment on as good a basis as that provided for cows, sheep, or other stock.

To complete the explanation of why pig accommodation is inadequate, one must turn to another section of history. In this new country of ours, the dairy industry was continuously expanding until 1936. Every penny that was available, every hour's work that could be spared, was more reasonably put into the major asset—cows, the improvement of stock, the purchase of manure, plant, and equipment, the erection of fences, drainage, the 101 jobs essential to development. Very little cash or time was available for pig development.

History is valuable as a guide to the future and as a means of living up to date. The dairy industry is now almost fully developed, and some of the time and money spent in its development can be diverted to pigs. You have had experience of different kinds of equipment with pigs, you know the worth of good equipment with cows; the stage is set to bring your pig accommodation up to the standard of your cow plant. Already, there are many who have installed new pig plants, and probably everyone has reasoned out for himself why he should have better

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accommodation for pigs but doesn't quite know where to make a start. When he does the job, he wants to do it well.

The Department of Agriculture recently published a bulletin (Bulletin 177, now issued free) dealing fully with this problem, and you are advised to get one of these, either from your dairy company or the nearest office of the Department of Agriculture. All the various types of houses in this bulletin are good, but it must be remembered that they have been designed by farmers for their particular farm and locality, and taking into consideration their rainfall, severity of the winter, and class of land. These factors have to be considered before deciding upon a type.

After you have read the bulletin it is advisable to get in touch with the Stock Inspector in your district or with the Supervisor of the Pig Council. These officers see most of the new lay-outs that are being built, and can help you on a number of small points.

What Proper Housing Means

The proper housing and equipment of a piggery means, firstly, an expenditure of from £25 to £30 per sow. In the past, too many have tried to dodge this expense, but you can't make bricks without straw. Almost without exception, those who spend this amount on equipment get back the capital cost through improved profits within a couple of years.

If you plan an open-air piggery you need a house and run for every sow so that the litters can be left after weaning in their original pens until they are ready to kill; you need sow accommodation for dry sows, accommodation for boars, and one or two spare pens for accidents; you need a central feed house, a loading and weighing race, and drafting yards. You can do without them just as you can do without boots or socks, but it is not as satisfactory as having them. If the lay-out is not in a warm and sheltered position, it will be an improvement to have fewer pens for sows and to replace them by a weaner or fattening house. Nine out of every ten pig lay-outs are overstocked, and overstocking is the first step towards failure. It results in bare paddocks which provide no grass, dirty conditions which kill pigs, mixing young and old pigs to the disadvantage of the youngsters, and, finally, a lack of interest on the part of the owner.

If you decide to have the accommodation centralised, you again need a pen per sow, or alternatively, two pens for three sows, plus a fattening house. The yards and conveniences are required as before. Less fencing, but a better water supply, more drains, concrete paths and yards are needed for a central house than for the scattered units, so that the costs are just about the same whichever lay-out is built.

Lay-out of Houses

Houses should be warm and draught-proof, and roofed to keep the rain off the pigs' bed. Floors should be of concrete, with sufficient slope to keep them reasonably dry. Sleeping platforms should be close-boarded over concrete. About 8 square feet of floor

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space should be allowed each baconer. Where shingle is cheap, it is advisable to make the walls, or at least the lower part of them, of concrete. Troughs which can be shifted for cleaning are an advantage, and should be wide and shallow rather than V-shaped or deep, Cross-bars to keep the pigs out of them and trap doors or chutes in front for filling are an advantage. Heavy timber, iron, or concrete are the order of preference for troughs. In a centralised piggery there is always a yard or enclosure about the size of the individual houses or sties. In the Danish house this is effectively divided up into a feed space and a lower place for excreta. Even with open-air houses, this concrete-floored yard is an advantage. When the house is used as a farrowing unit a small place should be set aside for the youngsters to feed in, undisturbed by the sow.

Fencing is best done with cyclone netting. Barbed wire has been extensively used in the past, but it should be used only along the ground to protect the bottom of the cyclone; otherwise, it causes too many wounds, scars, and blemishes which result in rejections at the works. Under the open-air system paddocks should be from one-tenth to one-quarter of an acre, depending on the class of country and the way it is intended to use the paddocks. With a centralised system, the ideal is to use the cow paddocks, where possible, for stores and fattening pigs and have quite small paddocks only for sows and litters. Gates are satisfactorily made by stretching cyclone across wooden frames. Various devices for hanging the gates are shown in Bulletin 177.

Water and Feed

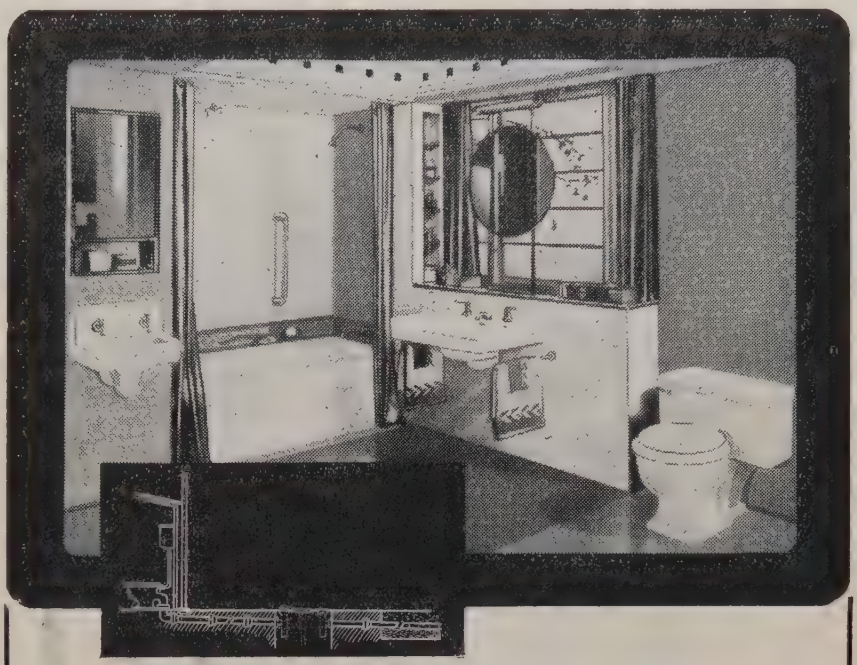
Water should be laid on to all piggeries. Don't try and economise by putting troughs in the fence line to reduce the number of troughs and ball cocks wanted. It is better to make quite small troughs and have them away from the fence lines. On level ground only one ball cock can be made to control the water level in several troughs. For a central house a high pressure supply can save much time and labour in cleaning.

In a central house, drainage is as important as anything else. A proper slope on the floors, and channels and sumps of the right size and properly located are of the greatest value. Many a good piggery is spoiled because of bad drainage.

A feed shed, bins for mixing, buckets and trolleys for feeding, brooms, shovels, and cleaning equipment specially for the pig sties are well worth having.

Near the feed shed a yard for drafting, with a loading race, weighing crate, a bail for ringing and holding pigs, and a dip are all conveniences that every piggery should have. The loading race prevents the bruising of pigs, the weighing crate pays for itself in the first batch of pigs you sell, the bail makes it possible to ring pigs that can spoil a paddock in 24 hours, and a dip is the easiest way of keeping lice and mange in check.

Above all, good housing and conveniences are the savings bank for feeding and breeding.



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Midday Weather Forecasts for Farmers

OF special interest to farmers is the system of telegraphic weather forecasts recently reinstituted to compensate, to some measure, for the handicap resulting from the wartime suspension of meteorological broadcasts.

Under the present scheme, the Dominion has been divided into sixteen districts, for each of which a twenty-four hour forecast is issued at noon daily, except Sundays and holidays. To each forecast is added a "further outlook," which gives an indication of the general conditions or developments likely to occur in the day or two following the close of the main forecast period. While this further outlook cannot be as accurate as the twenty-four hour forecast, it should be of definite value to the farmer in planning his various operations.

The 118 Post Offices which receive forecasts appropriate to their district are listed below. At these offices the forecasts, which are usually received shortly after midday, are displayed for public information. They are also available in the local telephone exchange for the benefit of those who wish to inquire for them by telephone.

If any subscriber connected to one of the local exchanges concerned desires to have the forecasts forwarded regularly by telephone he can avail himself of a further service provided by the Post and Telegraph Department. This service is described by the following section extracted from the information appearing in the Post Office Guide:—

"Provided that a weather-forecast telegram is regularly received there, a subscriber to a telephone exchange or a private telephone line owner connected with a Telephone Office may have such a telegram telephoned for an annual payment of £1, or 10/- for one season of three months, commencing from any date desired."

The following is a list of places to which midday district weather forecasts are distributed by telegraph:—

District A.—Kaitaia, Russell, Whangarei, Dargaville, Kaikohe.

District B.—Helensville, Auckland, Pukekohe, Raglan, Kawhia. Coromandel, Waihi, Paeroa, Tauranga, Huntly, Morrinsville, Cambridge, Te Awamutu, Te Kuiti, Taumarunui.

District C.—Rotorua, Taupo, Whakatane, Opotiki.

District D.—New Plymouth, Whangamomona, Opunake, Hawera, Stratford.

District E.—Te Araroa, Tokomaru Bay, Tolaga Bay, Te Karaka, Gisborne, Wairoa.

District F.—Napier, Hastings, Waipukurau, Porangahau, Dannevirke.

District G.—Raetihi, Taihape, Patea, Wanganui, Marton, Feilding, Palmerston North, Foxton, Otaki.

District H.—Pahiatua, Eketahuna, Masterton, Featherston, Martinborough.

District I.—French Pass, Takaka, Motueka, Nelson, Murchison.

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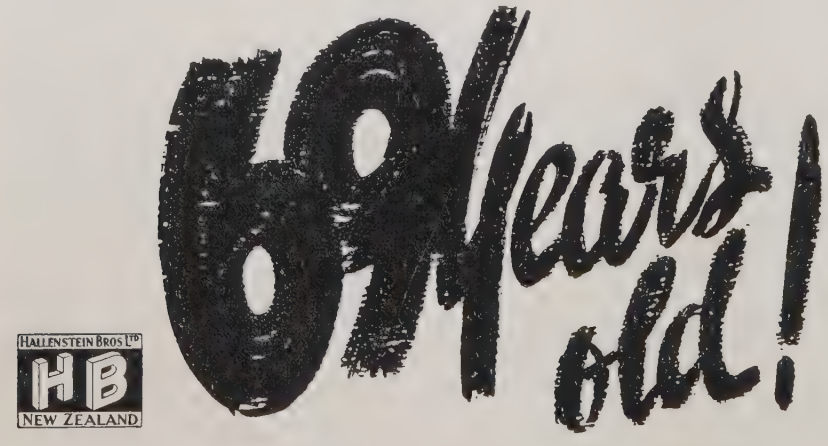

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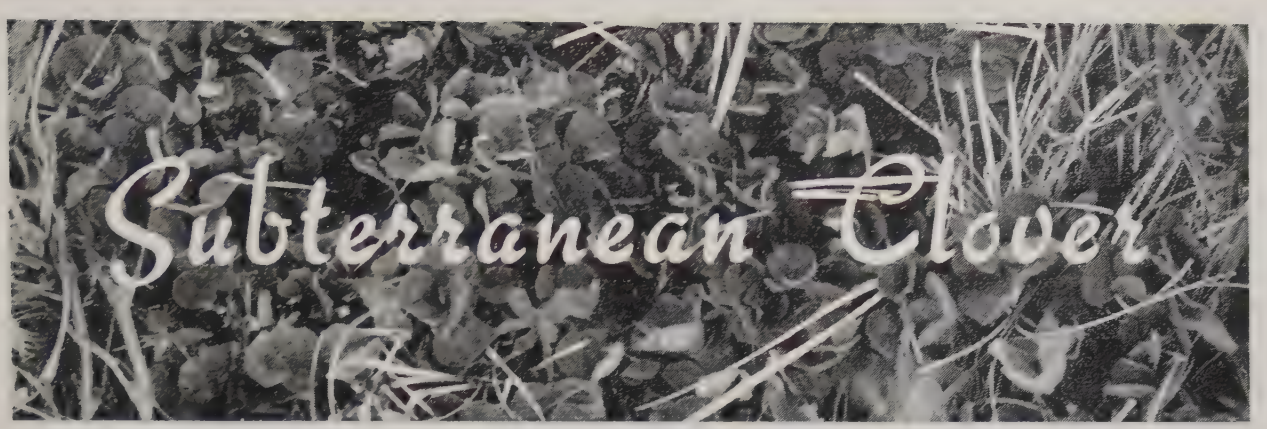

Continuing the series of articles on experimental trials of subterranean clover in the southern half of the North Island, this article describes the results of the sowings in the Horowhenua, Makara and Hutt counties, and sets out the conditions under which subterranean clover will prove of definite benefit.

VALUE IN WELLINGTON PROVINCE

By
G. S. ROBINSON,
Instructor in Agriculture, Levin.

IN order to study the results of subterranean clover in the Horowhenua district over the past few years and to reach a definite conclusion as to its value, it is necessary to consider its success or otherwise on the different soil types. Briefly, these soil types are:—

(1) Sandy country of a more or less consolidated nature. Subterranean clover on this type of soil has definitely been shown to be beneficial, provided phosphate is sown with it.

(2) Hill country. This constitutes the lower western slopes of the Tararua Ranges together with the hill country in the Hutt and Makara Counties. Briefly, results on this type of country have been quite good. This is especially so on the drier country south of Waikanae.

(3) Stony flats. These flats almost invariably dry out in the summer, and subterranean clover should always be sown on them.

(4) First and second class land, including swamp. Generally, white clover will grow well on this land and subterranean clover will not persist, but on the lighter land of sandstone formation results from subterranean clover in the first year or two following sowing down warrant its inclusion in the seeds mixture.

The best methods of making use of this valuable clover, together with the experiences of farmers who have profited by its use, form the basis of this article.

A. Sand Country

The sand country stretches in a belt of up to 10 miles in width from Paekakariki in the south to Patea in the north. South of the Manawatu River alone, there is an area of approximately 600,000 acres of sand ridges and flats interspersed with swampy flats of more or less peaty nature. The general practice has been to bring in these latter flats and leave the drier ridges which, at their best, have provided rough grazing. Numerous farmers, however, have topdressed these sandy areas and at the same time surface-sown from 1 to 5 lb. of subterranean clover per acre. Considerable improvement has resulted and the original covering, which varied from bracken to ratstail, *poa pratensis*, danthonia, and a little browntop, has improved so that cocksfoot and traces of the better grasses are coming in and taking their place in the sward alongside the subterranean clover.

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It is impossible to estimate the resulting increase in production following the introduction of the clover, as topdressing should invariably go hand in hand with it. In the Paraparaumu district, subterranean clover was sown on many holdings early in the century, but little was seeen of it until topdressing raised the fertility. Mr. W. H. Potts, who has been dairy farming on sandy country in this district for more than 20 years, has not sown any subterranean clover, but has topdressed regularly in recent years, which has resulted in his farm, except the better flats, being subterranean clover dominant in the spring. Carrying capacity has increased by 50 per cent. in the last 12 years. Even what were formerly densely covered ratstail slopes are being opened up by the clover and cocksfoot, and the better grasses are coming in.

An experimental surface sowing was made in 1937 in the same district on a sandy flat on the property until recently farmed by Mr. R. McLean. Three plots were put down, one of subterranean clover without superphosphate, one of the clover and superphosphate, and one with superphosphate alone. Where the fertiliser was sown with the clover, a wonderful improvement was noticed in the pasture, and now ryegrass and white clover are coming in strongly, giving a good dense sward. Where superphosphate alone was sown, it is interesting to note that subterranean clover already in the pasture, but previously not noticeable, became more vigorous and began to spread.

A typical view of sandy ridges invaded by bracken fern.

On similar consolidated sand country in the Levin district Mr. V. Lewis has had excellent results with topdress-

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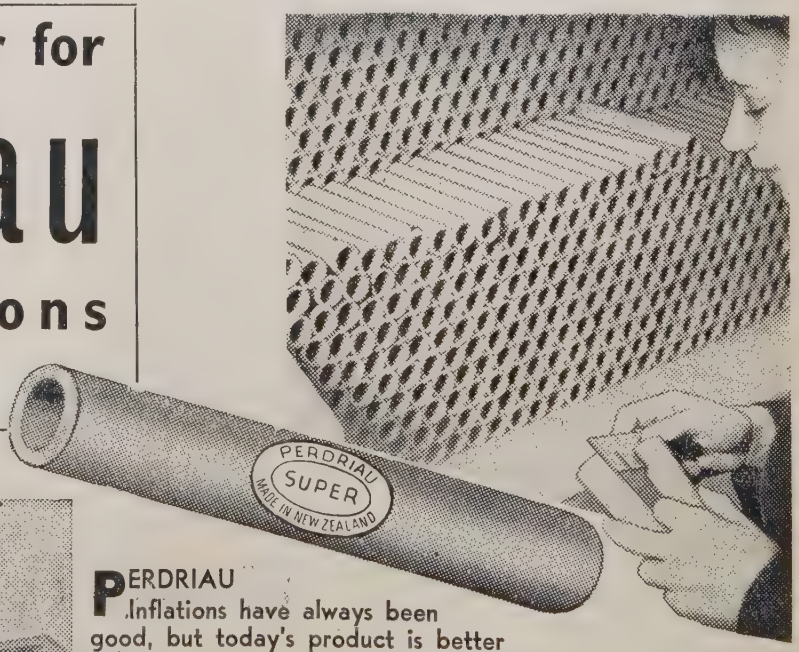

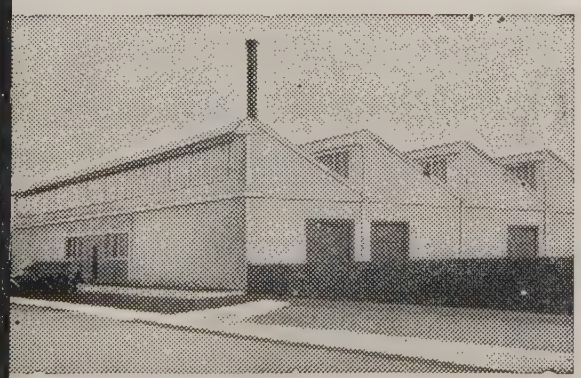

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Sand country pastures developed for dairying by subterranean clover and topdressing.

ing 1 lb. of seed on the sandy flats and 2 lb. of seed on the ridges. Subterranean clover is now dominant on this area in the spring after three years, and an excellent cut of silage was taken off in the past season.

Spelling

The quick establishment of subterranean clover on sand country depends largely on the management in the first year. A light seeding of 2 or 3 lb. per acre can be converted into a subterranean clover dominant sward, provided it receives a topdressing of 2 to 4 cwt. of phosphates and is spelled during the first spring. The latter point is most important, as it allows the runners to develop and extend, giving a greater and more even seeding for the following year. On this light country, which dries out early, spelling should not be left too late. In an average season, light grazing from the beginning of October should allow plants to produce the maximum amount of seed. A seeding of even 2 or 3 lb. per acre can, under such management, result in a sward which in future years will not require special lenient grazing during the spring.

Ploughable Sand Country

A seed mixture for sand country should invariably contain 2 lb. of subterranean clover. In spite of the fact that this clover will nearly always become dominant in the first year or two, it is still necessary to sow some white clover. On the sandy flats especially, damper patches are common, and it is here that the white clover will be useful from the start. As the pasture becomes older and the fertility is raised, white clover will play a most important part.

B. Hill Country

The hill country north of Waikanae is of a wetter nature than that further south, with the result that control of secondary growth is a more difficult problem. Subterranean clover does not progress so well on these wetter slopes, and it appears that in the first instance it is better to sow it on ridge crests and on the drier and sunnier positions. Further south from Waikanae, excellent results can

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be expected from the application of two or three pounds of the clover together with superphosphate.

Mr. E. Lynch, Pahautanui, has been topdressing with basic slag and subterranean clover for a number of years, and this practice has made a great transformation in the sward. In 1937 a trial was put down on this property on the lower ploughable country to try out the various strains of subterranean clover on ploughed land. Five pounds of seed were sown together with perennial ryegrass and white clover. Mount Barker and Tallarook strains were prominent in the first two years, and resulted in a much denser sward.

White clover is, however, now playing a more prominent part, and will ultimately be the more valuable clover. Mount Barker proved to be the best type to sow, and Tallarook, while being later, did not give the bulk of feed produced by the more popular strain. Dwalganup, a very early variety, is totally unsuitable for conditions in this district.

Mr. E. S. Dickerson has also had outstanding results from subterranean clover in the past two years. This property, which consists largely of run-out hill country carrying scarcely one ewe to the acre, has been improved in two years to such an extent that the carrying capacity has increased by at least 50 per cent. Topdressing and subterranean clover are mainly responsible. Many other examples could also be quoted which would serve to show the value of this species in this and in the Makara and Ohariu districts.

On this sandy ridge subterranean clover is taking the place of the practically useless ratstail.

C. Stony Flats

Whether stony flats are ploughable or not, subterranean clover should be the means of raising their fertility. On the better types, such as the flats just south of Levin, white clover will, after the first year or two, dominate

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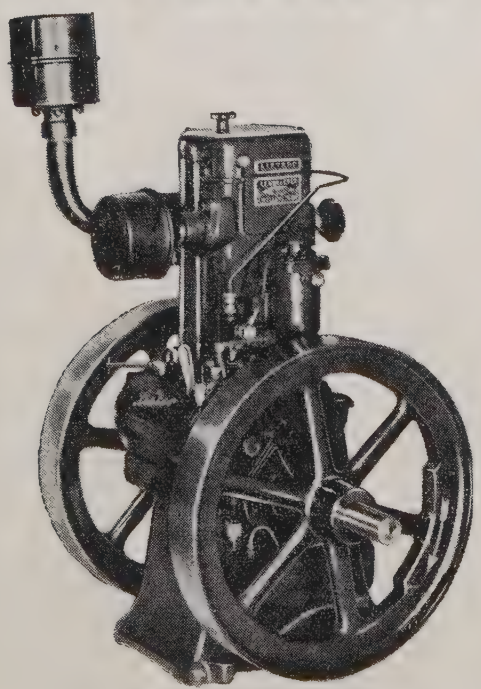

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the subterranean clover. The latter will, however, have served its purpose and produced much feed. On the poorer ploughed flats it will persist longer.

Where the soil is too stony to be ploughed, as in the Hautere district south of Otaki, sward improvement must be attained by topdressing and the introduction of better pastures species. Subterranean clover should be the first consideration. This soil in its natural state is poor, but can be improved to a great extent by supplying phosphates together with clovers to make use of it. The addition of ½ to 1 lb. of certified white clover to the 2 to 3 lb. of subterranean clover will ensure that there is something to take up the running as the fertility improves.

Best results have been obtained by sowing subterranean clover early in the autumn, giving it a chance to make as much growth as possible before the winter. It should be sown at a time when it can germinate as soon as the summer dry spell is over. Generally, February is the best month in this district.

D. First and Second Class Land

The general rule on first and second class land is that where white clover is a strong component of the sward, subterranean clover is not required, and cannot compete with the white clover. There is therefore no need to include subterranean clover in the mixture for swamp country. On the standstone soils around Levin and Otaki, it may be advisable to include it in the mixture, especially if difficulty is found in establishing white clover; elsewhere, white clover and red clover are sufficient.

Summary

(1) Subterranean clover is essential for the improvement of consolidated sand country.

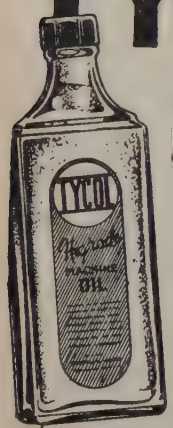
(2) Sowings on hill country have been amply justified, especially south of Waikanae; north of this point best results have been secured on the drier and sunnier slopes.

(3) Subterranean clover can improve these soils only if phosphates are applied with it; make full use of your superphosphate by supplying this clover to use it.

(4) The first stages of the improvement of stony soils should be to use subterranean clover and superphosphate.

(5) On the better soil types, where white clover grows strongly, subterranean clover is not necessary.

TYCOL



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Unofficial Litter Recording

Contributed by the Livestock Division.

WHEN litter recording was first started in New Zealand its main objective was to find the prolific strains of pigs. It very soon became clear, however, that prolific strains were to be found only when the attention given to the pigs was of a reasonable standard, and that there were very many quite good pigs that never got a chance of proving their worth. In this respect, litter recording ran on parallel lines with herd testing. Herd testing has been a tremendous force in improving cow production, not because it pointed out the good cows, but chiefly because it focussed attention on the need for looking after any kind of cow if you wanted to get the best out of her.

During the six or seven years of litter recording — 1928 to 1934 — it brought to light the weaknesses of bad accommodation, wrong feeding and inadequate attention on many farms, and by improving them made a general improvement in the level of pig production, not on the recording farms only, but on the majority of farms where pigs were kept. The production of 40 lb. weaners has been the main objective of litter recording. At first the 40 lb. weaner was considered an impossibility. Only one per cent. of the litters recorded in the first year produced 40 lb. weaners, in the third year 56 per cent. of the litters had reached the 40 lb. level. Today, the ideal of a 40 lb. weaner is accepted in almost every country in the world.

The 40 lb. weaner is not valued only for the excellent growth made. Its virtue lies in the fact that in making that rapid growth the pig must be healthy enough to combat the many infections to which all young animals are subject, and is able to start its independent life unhampered by disease and full of growth force. The 40 lb. weaner commands attention and gets it; it's worth looking after. By producing good pigs the owner gets satisfaction from his work and develops that pride of ownership that is the cornerstone of success. So, from an attempt to select good pigs, the owner by a variety of indirect routes succeeds in getting good pigs, or in discovering that his own are as good as the best.

With these ideas in mind, the executive of the National Pig Industry Council recently decided to undertake unofficial recording of commercial sows. This service is given by the Supervisors of the District Pig Council; it costs the farmer nothing, and there are no forms to be filled in! It is quite distinct from the Pedigree Sow Recording Scheme, which was instituted some five years ago at the request of pedigree breeders, and which is carried out by officers of the Department of Agriculture.

The results of the unofficial litter recording will be published in the "Journal" every quarter, where possible. The following returns have been received from Auckland, Waikato, Taranaki and Terawhaiti District Pig Council Supervisors.

As a result of past years of recording it is now recognised that the total weight of the litter at three and eight weeks is a better indication of the value of a litter than the actual weight per piglet at eight weeks. Thus, 10 pigs of 35 lb. each is looked upon as better than eight pigs of 40 lb. each at weaning. On this basis of total litter weights at three and at eight weeks these litters have been arranged in the following grades:—

Grade.	Litter weight at	
	3 weeks.	8 weeks.
1	120	360
2	100	300
3	90	270
4	80	240
5	70	210

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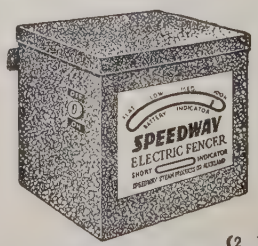

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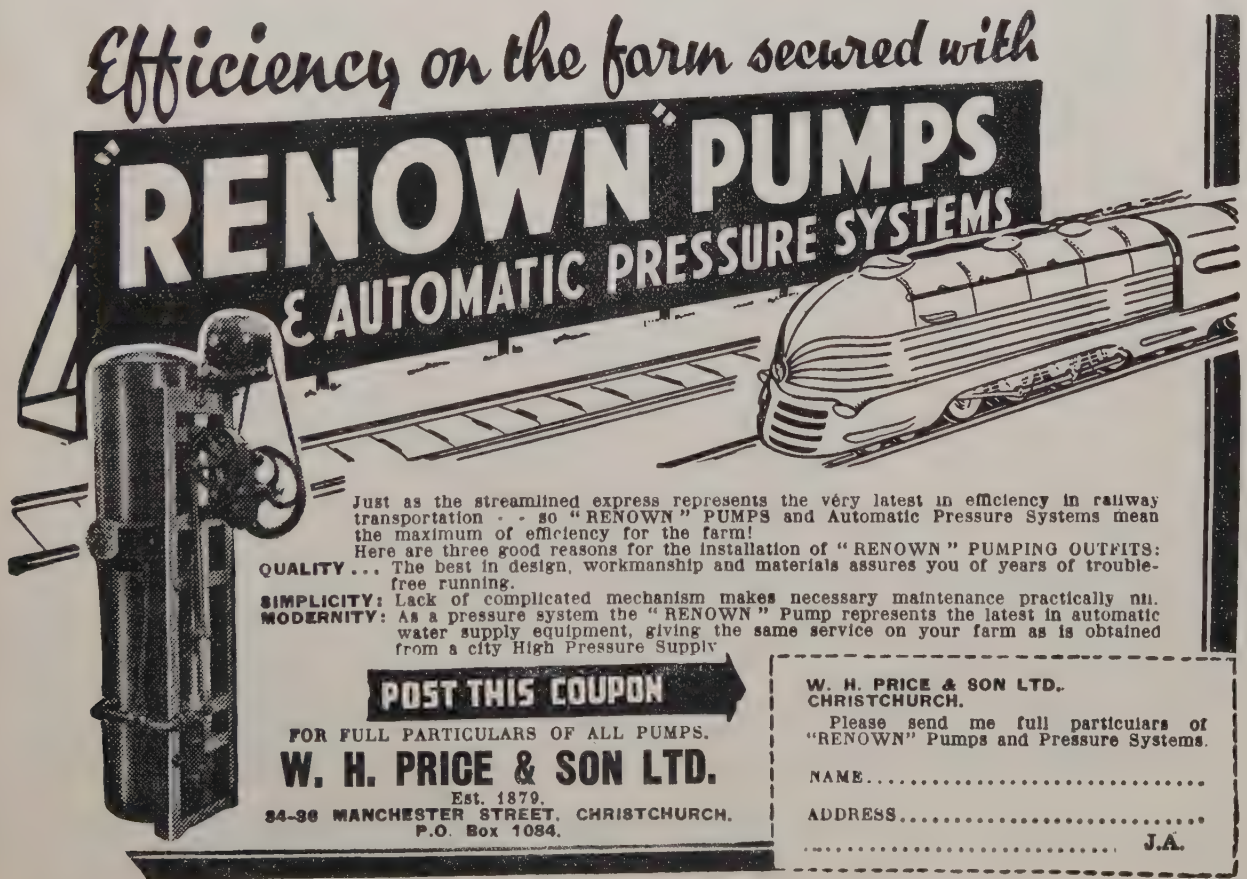
LITTERS BY BERKSHIRE BOARS.

Owner's Name.	Boar.	Sow.	No. Born.	No. Weaned.	Weights at 3 weeks. Litter.	Weights at 3 weeks. Per Pig.	Weights at 8 weeks. Litter.	Weights at 8 weeks. Per Pig.	Grade.
Auckland Pig Council, Pukekohe.									
W. Draper	15412	T.B.	11	9	123	13.7	396	44	1
T. J. O'Reilly	Unrgd.	T.B.	14	11	150	13.6	392	35.6	1
J. A. Paterson	14604	T.L.W.	14	10	129	12.9	388	38.8	1
G. L. Tomkins	16101	T.	10	8	100	12.5	324	40.5	2
B. D. J. Wright ..	13577	L.W.	16	11	139	12.6	316	28.7	2
T. J. O'Reilly	Unrgd.	T.L.B.	10	9	115	12.8	300	33.1	2
G. Watt	15432	15543	10	9	126	14	305	34	2
G. L. Tomkins	16101	T.B.	10	8	98	12	323	40.4	3
W. Holmes	13928	L.B.x	14	10	92	9.2	300	30	3
J. A. Paterson	15412	12942	10	7	98	14	272	39	3
J. Ball	15432	14543	9	9	125	13.9	295	36.9	3
W. Holmes	13928	T.	11	5	82	16.4	245	49	4
I. Ball	16923	18232	13	8	85	10.6	312	39	4
J. A. Materson	15412	14603	16	7	85	12.1	253	36.1	4
G. Watt	15915	15715	7	6	86	14.3	243	40.5	4
S. N. Jamieson ..	15242	B.x	13	8	99	12.4	244	30.5	4
S. Jamieson	15242	B.x	8	8	102	12.7	251	31.4	4
T. Slater	Unrgd.	14848	9	9	85	9.4	256	28.3	4
C. I. Harkness	Berk.	13582	7	5	62	12.4	162	32.4	—
F. A. Dewhurst ..	16351	18262	8	6	62	10.3	143	23.8	—
W. Draper	15412	14889	5	4	70	17.5	181	45.2	—
M. J. Barrett	14448	T.	10	6	(8) 109	13.6	203	33.6	—
W. Draper	15412	15658	12	6	64	10.7	225	37.5	—
Tairawhiti Pig Council, Gisborne.									
N. B. Atkins	12777	15879	12	10	(11) 129	11.5	415	41.5	1
K. Hepburn	16310	15949	11	10	114	11.5	332	33.2	2
K. Hepburn	10830	14094	14	10	105	10.5	345	34.3	2
Puha Pig Club	13858	Berk.	6	6	78	13	235	39.2	5
D. O'Connell	16147	Berk.	6	6	66	11	202	33	—
D. O'Connell	16310	Berk.	7	7	69	9.9	238	34	—



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Owner's Name.	Boar.	Sow.	No. Born.	No. Weaned.	Weights at 3 weeks. Litter.	Weights at 3 weeks. Per Pig.	Weights at 8 weeks. Litter.	Weights at 8 weeks. Per Pig.	Grade.
Litters by Berkshire Boars—contd.									
Taranaki Pig Council, New Plymouth.									
F. Crowe	13697	13656	11	8	104	13	319	39.9	2
E. Mahon	15862	15083	9	9	115	12.8	361	40.1	2
E. Mahon	15862	15083	10	8	112	14	299	37.4	3
S. George	15721	Berk.	10	8	81	10.1	269	33.6	4
S. Baarton	16311	Berk.	9	6	84	14	216	36	5
Waikato Pig Council, Hamilton.									
Otorohanga Pig Club ..	12468	16636	10	10	115	11.5	331	33.1	2
H. E. Annett	Unrgd.	T.	9	9	97	10.8	304	33.8	3
H. E. Annett	Unrgd.	Berk.	9	6	44	7.3	153	25.5	—
H. E. Annett	Unrgd.	T.	9	2	24	12	75	37.5	—
H. E. Annett	Unrgd.	T.	10	3	28	9.3	94	31.3	—
H. E. Annett	Unrgd.	T.	9	6	99	14.1	174	29	—
40 Litters: Average			10.2	7.5	95.5	12.6	267	35.4	4
Death percentage 26.3 per cent.									

LITTERS BY LARGE WHITE BOARS.

Auckland Pig Council.									
J. W. Morgan	4863	B.T.	12	11	144	13.1	436	39.6	1
A. C. Landon	Unrgd.	L.B.	11	9	138	15.3	406	45.1	1
A. C. Landon	Unrgd.	L.B.	13	12	144	12	414	34.5	1
A. C. Landon	Unrgd.	L.B.	14	11	147	13.4	402	36.5	1
A. C. Landon	Unrgd.	L.B.	13	13	152	11.7	443	34.1	1
G. D. Sexton	5055	L.B.T.	11	10	124	(11) 11.3	361	36.1	1
K. Moore	Unrgd.	B.x	12	9	105	11.4	323	36	2
T. E. Morgan	5528	L.W.	13	9	112	12.3	351	39	2
W. H. L. Morgan ..	4863	L.W.	14	7	97	13.9	303	43.3	3
Geo. Adamson	4863	L.W.B.	8	7	99	12.1	264	37.7	3
W. H. L. Morgan ..	5828	T.L.W.	11	8	87	10.9	287	36	4
T. E. Morgan	4863	L.W.	8	6	86	14.3	247	41.2	4
A. Harwood	5528	T.L.W.	10	8	74	9.2	237	29.6	5
Average 13 Litters			11.5	9.2	116	12.6	344	37.3	2
Death percentage 20 per cent.									

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Owner's Name.	Boar.	Sow.	No. Born.	No. Weaned.	Weights at 3 weeks. Litter.	Weights at 3 weeks. Per Pig.	Weights at 8 weeks. Litter.	Weights at 8 weeks. Per Pig.	Grade.

LITTERS BY LARGE BLACK BOARS.

Auckland Pig Council.

V. S. Hastie	2578	2683	10	8	139	17.4	419	52.4	1
Elliott & Grogan ..	Unrgd.	T.	10	8	110	13.7	366	45.7	2
Elliott & Grogan ..	Unrgd.	T.B.	10	9	112	12.4	349	38.8	2
T. Slater	Unrgd.	T.	10	10	92	9.2	271	27.1	3
J. Mawhinney	Unrgd.	T.B.	10	7	86	12.3	286	40.0	4
J. Mawhinney	Unrgd.	T.B.	9	9	83	9.2	285	31.7	4
J. Mawhinney	Unrgd.	T.B.	10	8	80	10.0	295	37.0	4
F. D. Holt	Unrgd.	T.	5	5	61	12.2	213	42.6	—
Rangiriri Pig Club ..	2447	1739	15	7	93	13.3	191	27.3	—

Taranaki Pig Council.

Bulls Pig Club ..	—	3201	8	7	112	16.0	289	41.2	3
Rata Pig Club ..	3195	3194	9	4	47	11.7	127	31.7	—
Average 11 Litters			9.6	7.5	92.3	12.2	281	37.7	3

Death percentage 22.6 per cent.

LITTERS BY DUROC JERSEY BOARS.

Tairawhiti Pig Council.

A. Hills	Unrgd.	D.J.	8	8	131	16.5	418	52.2	1
I. Minow	Unrgd.	T.B.	8	8	100	12.5	313	39.5	2
I. Minow	Unrgd.	T.B.	7	7	92	13.0	262	37.0	4

Auckland Pig Council.

Geo. Ryall	Unrgd.	L.B.	11	5	37	7.4	140	28.0	—
F. G. Ashford	Unrgd.	L.B.	11	7	50	7.1	181	26.0	—
Average 5 Litters			9.0	6.6	82.0	12.4	262	39.9	4

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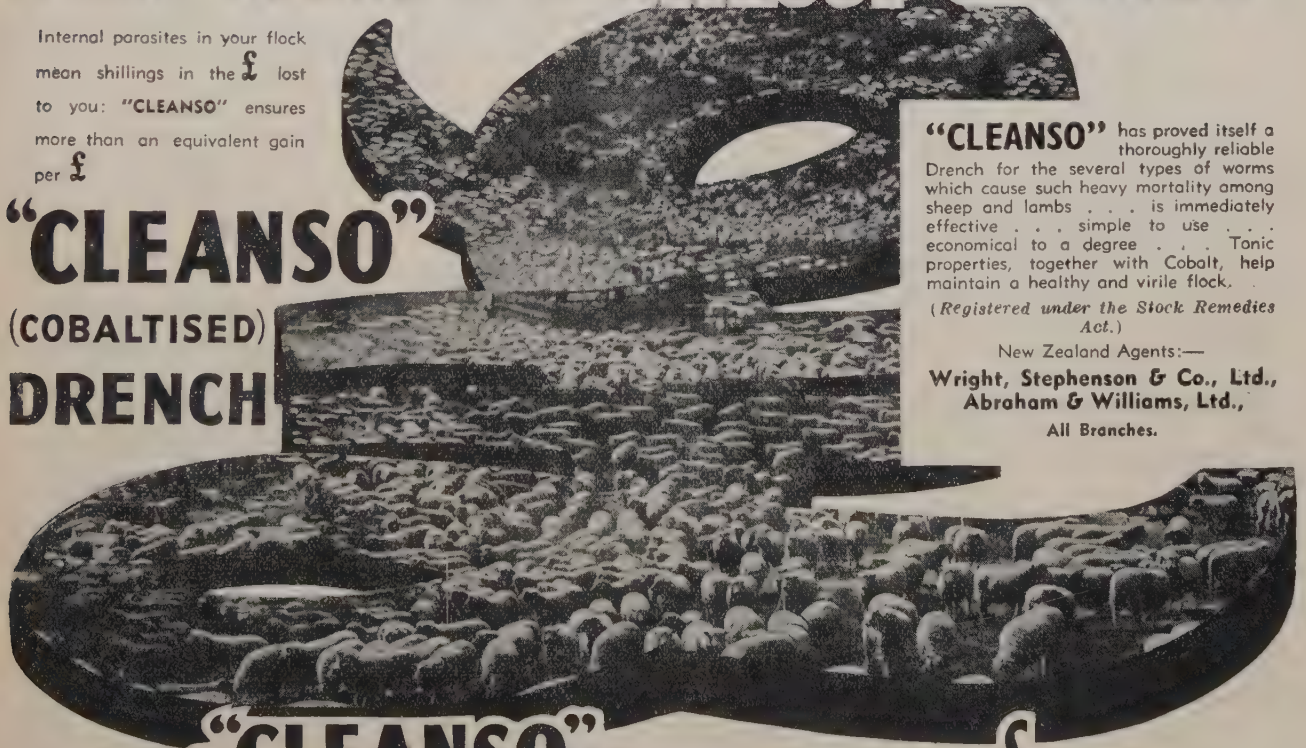

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LITTERS BY TAMWORTH BOARS.

Owner's Name.	Boar.	Sow.	No. Born.	No. Weaned.	Weights at 3 weeks. Litter.	Weights at 3 weeks. Per Pig.	Weights at 3 months. Litter.	Weights at 3 months. Per Pig.	Grade.
Auckland Pig Council.									
H. H. Hooper	11029	L.W.	9	9	139	13.2	406	45.1	1
H. H. Hooper	11029	L.W.	9	8	118	14.7	347	43.4	2
A. Franklin	12040	L.W.x	15	11	114	10.4	305	27.4	2
P. A. Dryden	Unrgd.	T.B.	10	10	141	14.1	307	30.7	2
V. S. Pointon	11901	12132	12	11	102	9.3	289	26.3	3
W. N. Hunter	11728	Unrgd.	11	10	100	10.0	288	28.8	3
E. Feilding	Unrgd.	Berk.	8	8	85	10.6	261	32.6	4
P. R. Hitchen	11799	11869	10	8	94	11.5	244	30.5	4
W. N. Hunter	11728	B.T.	11	10	85	8.5	263	26.3	4
C. R. McCutcheon ..	11353	10751	10	9	101	11.2	245	27.2	4
H. H. Hooper	11029	11540	12	6	73	12.2	220	36.7	5
W. J. Rodger	Unrgd.	B.	5	5	88	17.6	218	43.6	5
Bombay Pig Club ..	11728	11294	8	8	96	12.0	227	28.4	5
Waiuku Pig Club ..	12150	12455	10	9	79	8.8	233	26.0	5
J. M. Cossey	Unrgd.	Berk.	13	8	56	7.0	189	23.6	—
D. Cox	11386	11706	7	7	85	14.1	203	29.0	—
W. J. Rodger	Unrgd.	Berk.	12	5	73	14.6	199	39.8	—
D. Cox	11386	T.B.	9	7	75	10.7	186	26.0	—
W. N. Hunter	11728	B.T.	10	10	68	6.8	206	20.6	—
W. N. Hunter	11728	B.T.	14	8	62	7.8	163	20.4	—
Tairawhiti Pig Council.									
G. Sefton	9511	Berk	10	9	127	12.5	343	30.6	2
Taranaki Pig Council.									
Okoke Pig Club ..	Unrgd.	11168	11	6	108	18.0	295	49.2	3
Warea Pig Club ..	11154	11165	12	9	87	9.7	284	31.5	4
Omata Pig Club ..	Unrgd.	Tam.	8	6	81	13.6	228	38.0	5
Fordell Pig Club ..	12197	12700	6	5	64	10.8	172	34.4	—
Ratapiko Pig Club ..	12197	12477	6	5	74	14.8	147	29.4	—
Waikato Pig Council.									
Te Kowhai Pig Club ..	11741	12185	5	4	84	21.0	235	58.4	5
H. E. Annett	Unrgd.	L.B.x	11	10	92	9.2	232	23.2	5
H. E. Annett	Unrgd.	T.B.	10	6	44	7.5	156	26.0	—
H. E. Annett	Unrgd.	L.B.T.	8	7	81	11.5	205	29.3	—
Average 30 Litters			9.7	7.8	89.2	11.4	243	31.2	4

Death percentage 19.87 per cent.

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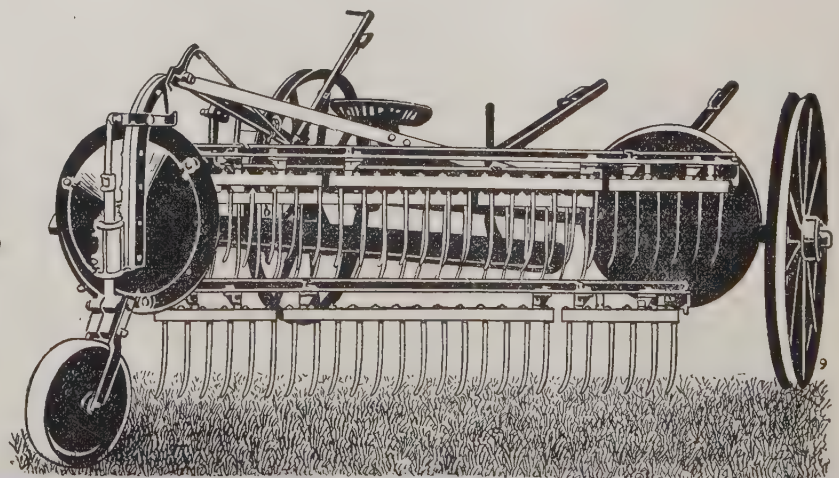

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LITTERS BY GRADE BOARS.

Owner's Name.	Boar.	Sow.	No. Born.	No. Weaned.	Weights at 8 weeks. Litter.	Weights at 8 weeks. Per Pig.	Weights at 8 weeks. Litter.	Weights at 8 weeks. Per Pig.	Grade.
Tairawhiti Pig Council.									
R. Warner	T.B.	T.B.	7	7	126	18.0	351	50.5	2
Auckland Pig Council.									
M. J. Fabish	B.x	Berk.	12	10	98	9.8	301	30.1	3
Geo. Pope	L.B.D.	T.L.B.	13	10	99	9.9	380	38.0	3
M. J. Fabish	B.x	Berk.	8	6	63	10.5	208	34.7	—
Waikato Pig Council.									
F. J. Jack	T.B.	Tam.	7	6	60	10.0	228	38.0	—
Average 5 Litters			9.4	7.8	79.2	10.2	251	37.4	5

Death percentage 17 per cent.

Summary by Breed of Boar.

Breed.	No. Litters.	No. Pigs Born.	No. Pigs Weaned.	Weights. 3 Weeks. Litter.	3 Weeks. Per Pig.	8 Weeks. Litter.	8 Weeks. Per Pig.	Death, %.	Average Grade.
Berkshire ..	40	10.2	7.5	95.5	12.6	267	35.4	26.3	4
Tamworth ..	30	9.7	7.8	89.2	11.4	243	31.2	19.8	4
Large White	13	11.5	9.2	116.0	12.6	344	37.3	20.0	2
Large Black	11	9.6	7.5	92.3	12.2	281	37.7	22.6	3
Duroc Jersey	5	9.0	6.6	82.0	12.4	262	39.9	26.6	4
Grade ..	5	9.4	7.8	79.2	10.2	251	37.4	17.0	5
Average of 104 Litters ..		10.1	7.8	94.5	12.7	272	35.0	22.6	3

The percentage of litters in each grade is as follows:—Grade one, 12.5 per cent.; two, 18.6 per cent.; three, 14.4 per cent.; four, 19.2 per cent.; five, 8.2 per cent; and no grade, 26.9 per cent.

A pleasing feature of these returns is the relatively large number of good litters. Over 73 per cent. of the litters recorded are good enough to be included in the five grades as shown, whereas only 52 per cent. of litters recorded from 1928 to 1934 came within these grades. A noticeable feature of the previous litter records was the fact that most of the litters were degraded because of a low weight at three weeks. In this series a far greater number have been degraded because of a low eight-weeks weight. If this state of affairs is maintained in subsequent records, it will be a source of considerable satisfaction. It points to the fact that the milking quality of these sows is on a fairly high level, but that the attention given through the creep is not so good. It is less difficult to improve the attention given to the litter after three weeks than it is to improve the quality of the sows.

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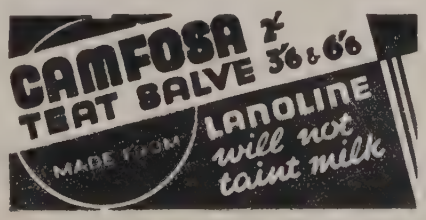

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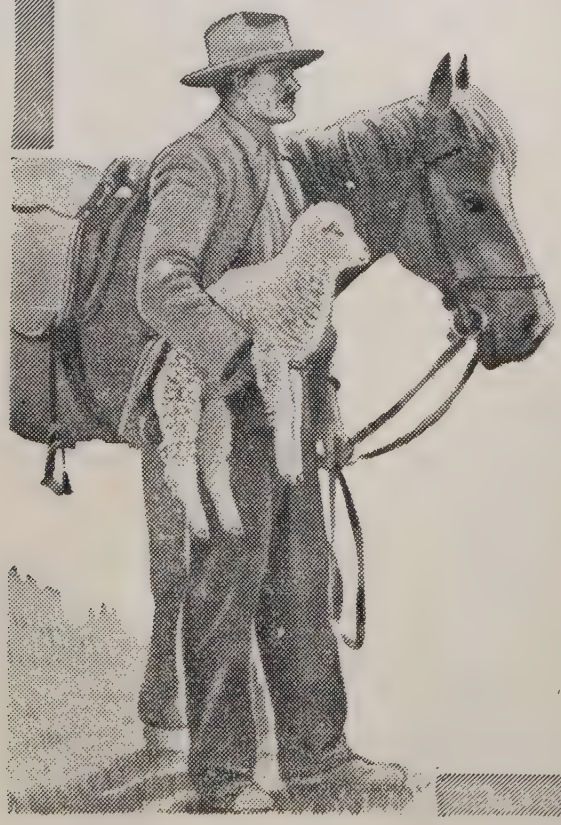

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N.C.A.

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WORM DRENCH

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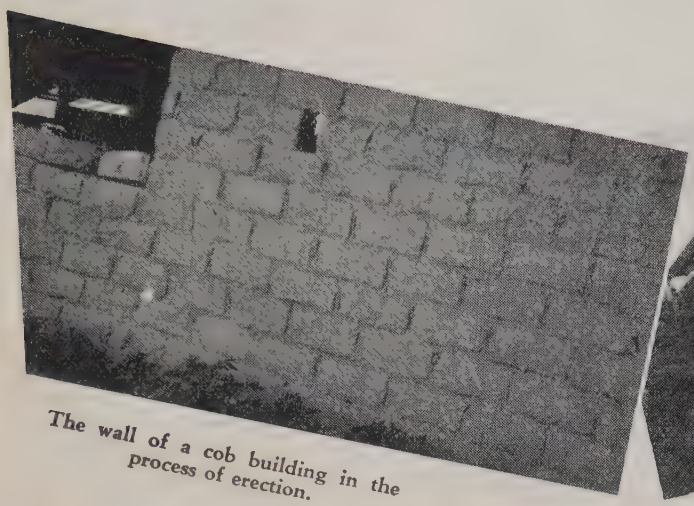
Buildings From The Earth



The wall of a cob building in the process of erection.

A modern cob house which has been roughcast.

By J. R. MARKS,
A.M.Inst.C.E., M.N.Z.I.E., Consulting Engineer to N.Z. Portland Cement Association.

THE practice of using puddled, unburnt earth as a material for domestic buildings has persisted mainly in those countries or regions where seasonal temperatures range between extremes of heat and cold in summer and winter and where, at the same time, the rainfall is comparatively low.

This fact probably gives a fair indication of desirability and suitability. On the one hand, earthen walls, when dry, have a very high thermal insulating value, while on the other hand, the material's resistance to moisture absorption and its durability when frequently wetted have been comparatively low.

It is therefore not surprising that in Central Otago, with its extremes of heat and cold and an annual rainfall of only 12 to 18 inches, earth-building found a place in the very early settlement and persisted to some noticeable degree at least up to twenty years ago.

At that time, there were still some "old-timers" who knew the art of such building and were still erecting houses of that kind for residents who appreciated their peculiar suitability to the region and the comparatively low cost. From some of those old-timers the author obtained information as to their methods of construction. Its reproduction here and now may save the craft of earth-building from dying out with the passing of those old craftsmen. Perhaps, also, it may induce some revival of a practice which certainly appears to have much to justify it in districts climatically suitable, more especially since the depletion of our forests has made good building timber a costly rarity.

There were three distinct types of earth construction in Central Otago. These may be briefly described as follows:—

Dry Cob

Choose a light subsoil, free from gravel or sand, but yet not clay. Discard the surface humus, and dig out the subsoil as required for the walls. Turn the dry subsoil on a mixing-board, sprinkling with water in a similar manner to concrete, and when slightly damped throughout place between wall-moulds in 2in. or 3in. layers and ram well. Two boards bolted together form moulds for walls, and are moved as soon as filled. Holes left in

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the walls by the bolts are filled with mud. No straw is used in this work, and almost any soil appears to suit.

Wet Cob

Choose material in the same way as for dry cob. Dig up a circular strip 2ft. or 3ft. wide and about 20ft. in radius. Puddle the dug material by applying water and driving a horse round in it. When partly-puddled, add about 2 per cent. of straw or tussock, and trample this in with the horse. When the material is about the consistency of workable putty dig it out and place it in walls in the same manner as for dry cob, and ram similarly. Wet cob is inclined to develop cracks in drying out, but these, when once filled with mud mortar, give no more trouble.

Sun-dried Brick

Prepare puddle exactly as for wet cob, but instead of building in mass mould the material into bricks 15in. by 7 3-8in. by 6in. alongside of puddling-ground. The mould can be removed

Newly made sun-dried bricks with the trench alongside, out of which the soil was puddled and the bricks made.

A miner's old cob house which has been plastered and whitewashed.

from the bricks an hour after making, and the bricks can be used in a week's time, being built to any recognised bond and jointed with mud mortar, the latter preferably to be slightly more sandy than material used for bricks.

General

In all cases, foundations should be made of stone in mud or cement mortar, or of concrete brought 9in. above ground level, and, after being topped with a 3in. layer of wet or dry cob, finished with a damp-course ready to start building walls. The cheapest damp-course, and one which is quite efficient, can be made with a ¼in. layer of tar and sand. Walls are usually built 15in. thick and solid. Window and door frames are built into the walls as the work proceeds. A good overhang should be given to eaves all round to keep weather off walls as much as possible.

It was more usual to leave walls without any outside dressing in any of the three classes described, but they can be given a better appearance and will probably last longer by applying one coat of whitewash consisting of one part cement to three parts lime, mixed with water, or two coats of raw linseed oil, coloured if desired. Plaster on the outside is inclined to lift with frost. The inside can be left undressed or finished the same as outside, or it will take plaster the same as burnt brick.

Lasting Qualities And Cost

Undressed wet- and dry-cob walls in Central Otago, more than 30 years old, appeared the same as new where care had been taken not to allow spouting to get out of order. Sun-dried brick was of more recent construction, but showed no appreciable deterioration after 20 years. There did not appear to be much difference in the lasting qualities of the three methods.

Dry cob was said to be only about two-thirds of the cost of wet cob or

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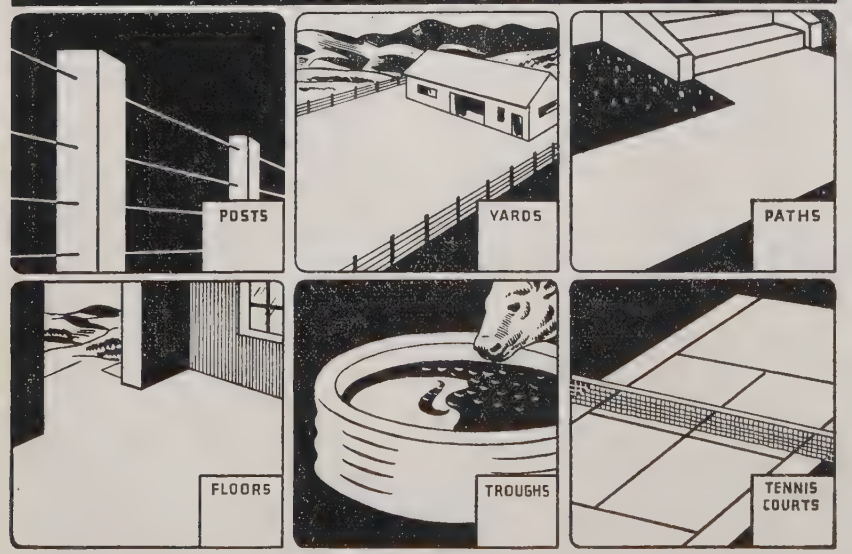

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sun-dried brick, while the two latter were almost equal in cost. A wet cob or sun-dried brick building would probably cost two-thirds of the cost of a similar building in timber, because the floors and roofs and fittings were the same in any case.

Experienced builders favoured sun-dried bricks as being the quickest to erect (after the bricks are made), better in appearance, and stronger because of non-liability to crack if properly bonded. At times when damp air and frost would cause moisture to condense inside a stone-walled house so that it could be wiped off with the hand, sun-dried brick walls were found to be quite dry.

Today there are available reliable waterproof cement paints in many most pleasing colours. While enhancing the exterior appearance of earthen houses, these paints might also extend the zones of their suitability to more humid regions.

Furthermore, in the past twenty years a new science, known as soil mechanics, has been developed, mainly for the purpose of stabilising road foundations. This new science appears to have many features that might assist in a more extensive use of earths for house-building, such as tests for selection of the more suitable soils or ascertaining the optimum moisture-content for best results with any given earth. It encompasses laboratory tests of puddled and packed sample pieces under conditions of repeated wetting and drying or freezing and thawing to check up on durability. Remarkable differences in resistance to slaking or breaking down of specimens of any given earth have been shown merely by altering the moisture-content at which it was puddled and moulded.

Then again, it has been shown that by mixing from 2 to 10 per cent. of cement with earths, according to their characteristics, most extraordinary increases in durability have resulted.

In general, this would appear to be a promising field where modern scientific research might step in where practical effort has somewhat halted and make further advances in the application of this oldest of building materials—Mother Earth.

How British Wire Manufacturers Face Up to War Difficulties

AN insight into why there is a shortage of wire in New Zealand and how British manufacturers are facing up to war difficulties is given in a letter from Mr. Michael Johnson, of Richard Johnson & Nephew, Ltd., wire manufacturers, England.

"We regret that we cannot report any material change in the situation already reported in previous British wire export circulars," says Mr. Johnson. "The position remains that licenses are not being granted except in such cases where it can be shown that the wire is required in connection with the war effort and cannot be obtained elsewhere.

"Several of our friends have been kind enough to enquire as to how we are carrying on under the strain of what have at times been front line conditions. At the time of writing we are pleased to say that our factories and offices are intact, although a few of our employees have lost their homes, and that everybody is well and united in the common purpose of defeating the Hun.

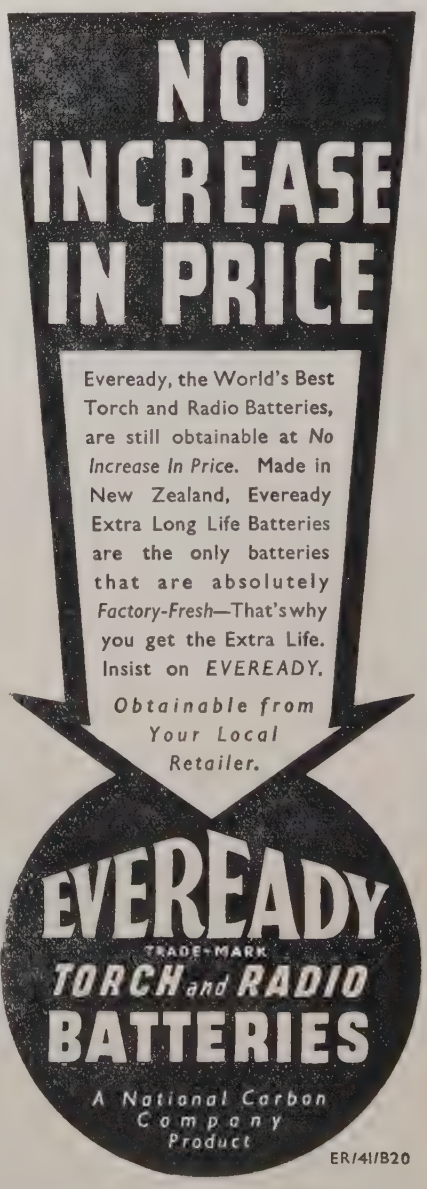
"Despite longer working hours and general difficulties created by wartime conditions, there is scarcely a man out of the 1,500-odd on our books who is not taking part in national defence work of some kind or other. At Manchester we have our own Home Guard detachment over 300 strong, and our Ambergate Works have their detachment. Despite long working hours—some of the men are on 12-hour shifts—they manage to find time for parades and tuition courses which are held during dinner hours, during the evenings and each Saturday and Sunday. Shooting competitions are held on the company's own miniature rifle range. Tactical operations and mock battles are staged regularly in order to prepare for the invader.

"An efficient fire fighting service has been established with its own fire engine, and fire drill and inter-team fire-fighting competitions are held. Others put in time as air-raid wardens, ambulance men or on the decontamination squad, which latter has passed every employee through the gas chamber. Wherever possible, courses and lectures are attended in order that the personnel may be kept abreast with developments and be equipped accordingly.

"It must be appreciated that all this work is purely voluntary. In addition, the directors, managers, foremen and all members of the staff take their turn at night fire watching, so that at our Manchester works there are never less than 90 men available to deal with the effects of incendiary bombs. Last, but not least there are the roof spotters, the 'Jim Crows,' as Mr. Churchill has called them, who maintain a perpetual vigil for hostile aircraft and have saved production many a lost hour after the air-raid sirens have sounded.

"Much structural work has been undertaken to enable operations to be continued at night time under black-out conditions—a difficult problem in a works with furnaces such as ours. Large air-raid shelters have been built, or rather tunnelled below ground level, and in addition 'pill boxes' have been constructed in the shops in order to enable the men to keep an eye on certain continuous work from safe positions during raids.

"The above will present a rough outline of the conditions under which we are working at a period when it is essential that one must be perpetually on one's guard against air attack and even invasion, while at the same time maintaining output at maximum possible capacity. We trust that our friends will find it of interest."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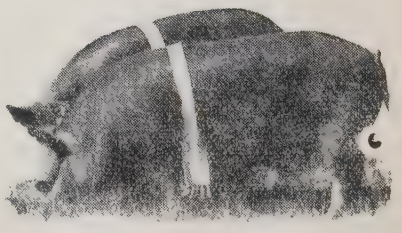

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The outstanding animals depicted above were a prominent feature of the recent Show at Gisborne, and the splendid condition in which these entries came before the Judges excited enthusiastic comment.

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Veterinary Notes for the Farmer

Loss from Liveweight to Deadweight On Whey-fed Pigs

Contributed by the
LIVESTOCK DIVISION.

ON more than one occasion during the last few weeks the question of loss from liveweight to deadweight on whey-fed pigs has arisen, the general opinion being that whey having a very high water-content must have an effect on the percentage of carcass obtained from pigs fed on whey. This, of course, is quite contrary to fact.

Some years ago it was the practice of the Waikato A. and P. Association to follow through to the freezing works all pigs that were exhibited in the pork and bacon classes with the object of comparing awards made on the hoof with those made on hooks, at the same time obtaining all information likely to be of value to the farmer. These pigs were tattooed as a means of identification of ownership and were weighed at the works just before slaughter so that the carcass weight might be compared with the liveweight.

The reason for such action by the association was to ascertain, if possible, the percentage of loss in pigs of different weights. In general, the percentage of loss in weight decreases as the weight of the pig increases. Pigs of 120lb. liveweight are calculated to yield carcasses of about 80lb, a loss of 33 1-3 per cent.; baconers, on the other hand, may lose only about 27½ per cent. Thus, a bacon pig of 200lb. will produce a carcass of about 145lb. This was the generally accepted basis for buying when buying interests purchased pigs for liveweight.

Results of Investigation

The results of these investigations into the loss in weight from liveweight to deadweight are interesting. During three years about 250 porkers and baconers exhibited at the show were weighed, of which 60 porkers and 30 baconers were whey-fed pigs. The loss from liveweight to carcass weight of the 60 porkers ranged from 29 per cent. to 39 per cent.; the average liveweight was 96lb., and the average deadweight 64lb, showing an average loss of 32.8 per cent.

The 30 bacon pigs showed a loss which ranged from 22 per cent. to 31 per cent., and the average liveweight was 196lb., with an average deadweight of 140lb., which averages an average loss of 28.4 per cent. As the figures for whey pigs are slightly better than those fed skim-milk over the same period, there is no ground for the claims made that whey-fed pigs show a greater loss in killing. Whey-fed pigs easily reach the accepted standard of 27½ per cent. for baconers and 33 1-3 per cent. for porkers. While there were not a great number of pigs recorded in these experiments, nevertheless the results were about the same for each year the observations were made.

As in most things, discoveries are made by accident or when looking for something quite different. The fact that there could be such a wide difference in the percentage of loss in pigs of the same weight was something of a surprise to the writer, and explains in a measure the reason for many complaints made by some farmers about the weights of pigs sent forward to the works. Farmers have claimed that, having installed weighing machines on their farms, they know to a pound how pigs should kill out. In view of the difference in the percentage of loss—29 to 39 per cent.—a porker of 100lb. liveweight could kill out at anything between 61lb. and 71lb. That there should be such a variation shows a vital connection between liveweight and deadweight and economic production.

Scales on the Farm

The scales on the farm should be used now from this other angle, not

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only to check up the works returns, but also to help the farmer keep a check on the quality of his pigs as far as loss from liveweight to deadweight means quality. Pigs may grow remarkably fast and be ready to go away at 16 weeks as porkers or 26 weeks as baconers, but if they make a loss of 35 to 40 per cent. at killing they are not economic pigs to breed. This, in turn, will focus attention on the sows or the boar. Is the strain a good one from the viewpoint of economic production? Is the particular method of feeding or management at fault? In all these things the scales can be a guide if the killing sheets are used in conjunction with farm weighings.

The information in relation to loss of liveweight to deadweight is of vital importance, not only as a guide to the farmer in the selection of stock, but also as a means of removing the disappointment of the seller and consequent friction that sometimes exists between seller and buyer.

—H. M. PEIRSON, Extension Officer in Pig Husbandry.

Salt Poisoning in Cows

ALTHOUGH salt poisoning is occasionally reported in pigs, dogs, and fowls, salt poisoning in cows is comparatively rare, but recently in the Tadmor (Nelson) district two deaths occurred in cows from this cause.

The farmer concerned mixed three parts of a four-gallon kerosene tin of coarse agricultural salt with one part of powdered mineral lick. This was placed in a galvanised bath outside the walk through bails, to be available for thirty dairy cows in the night holding paddock after the evening milking.

Next morning two cows were found down and in severe pain, and were attempting to vomit. Both died during the morning. A post-mortem examination showed very marked inflammation of the lining of the fourth stomach, which was covered with a coating of powdered lick and some salt.

Examination of bath showed that all but a few pounds of the lick salt mixture had been eaten. The other cows showed no ill effects.

From the history of these cases the following points were noticed:—

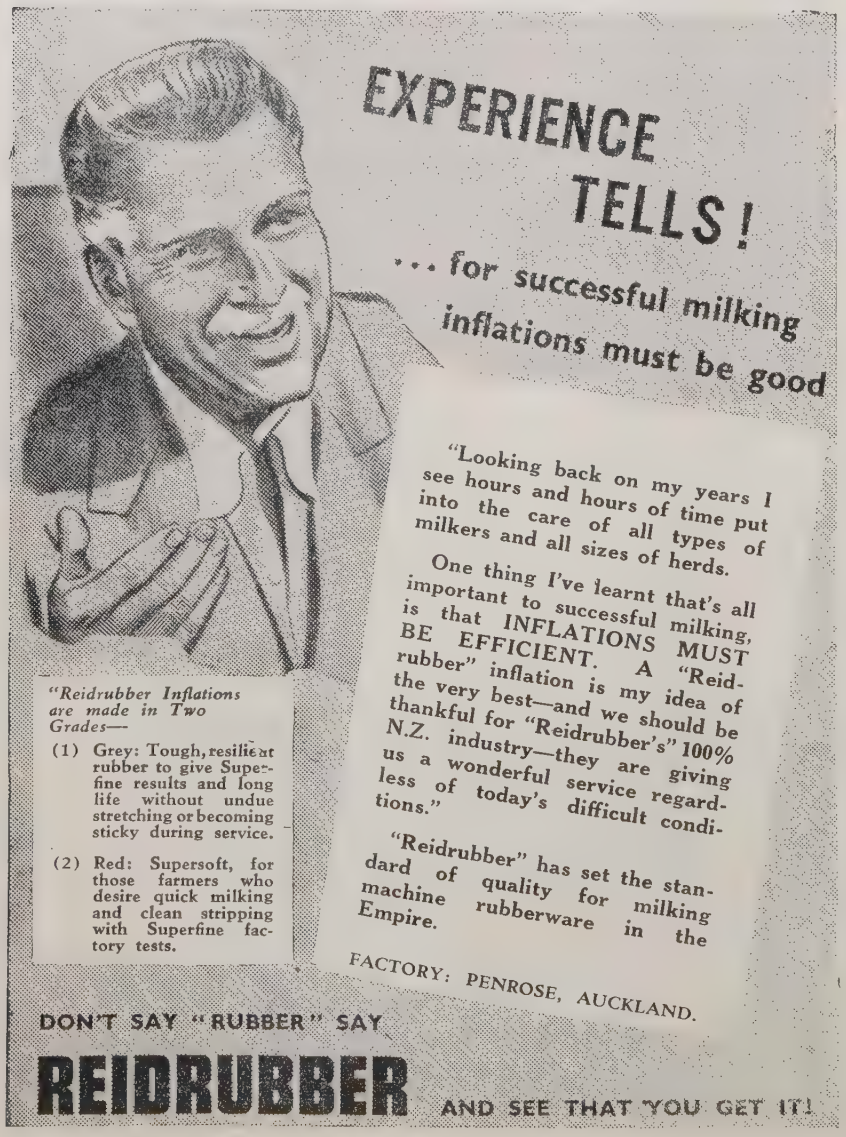
(1) The country on which the cows were running was situated remote from the sea coast and was very deficient in minerals.

(2) Salt had not been available on the farm for a considerable time.

(3) The cows affected were those which came to milking first and thus had undisputed access to the mixture before other cows were able to have their share.

(4) That in a galvanised bath ingestion of the mixture was easily accomplished.

—R. W. SKINNER, Inspector of Stock, Nelson.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Diseases in Pigs

THE number of pigs slaughtered for the season 1940-41 at registered premises was 959,384, an increase of 159,621 over the previous year's figures, states the Director of the Livestock Division in his annual report.

Inspection of carcasses at the time of slaughter covered 932,395, of which 155,387 carcasses were found to be affected in varying degree with tuberculosis, the percentage being 16.67 per cent., a decrease of 0.82 per cent. as compared with last year. The killings were made as follows:—Meat-export works, 767,908; abattoirs, 164,491; rural slaughterhouses, 26,985.

SUIPESTIFER INFECTION.

This infection of pigs continues to account for considerable mortality in pigs of almost any age. The conditions under which the disease is met with also vary very considerably. In some cases the housing and management of the pigs is considered to be good but deaths still take place, whereas no deaths may be seen on farms where the opposite conditions prevail. This, however, should not be viewed as a case for neglect of sound pig-husbandry principles, as the disease is much more easily checked where the conditions are good. In any case, the many other advantages obtained from the provision of good sanitation and housing are well worth while.

This has been well recognised during the year by the large increase in the number of up-to-date premises being erected for pigs.

SARCOPTIC MANGE.

Mange in pigs has been recorded from several centres. There is no difficulty over the diagnosis or treatment of this disease, and all outbreaks were successfully treated as a result of the advice given by the field staff during the year.

SWINE ERYSIPELAS.

It is evident that a considerable amount of swine erysipelas infection exists on many pig-farms in a few districts. The organism responsible for the disease is known as *Erysipelothrix rhusiopathiae*. A systematic examination of specimens of arthritic joints carried out at the Animal Research Station, Wallaceville, resulted in the isolation of the organism in many cases. In a few cases the organism was recovered from lymphatic glands and other specimens sent forward. Inquiry at the farms concerned did not show any mortality directly traceable to an outbreak of swine erysipelas, but lame pigs may be seen on some of the farms.

Further inquiries into the incidence of infection are being carried out. At the same time, the farms are being kept under supervision by the field officers.

NECROTIC ULCERATION OF THE SKIN.

This disease of pigs keeps cropping up on many farms where pigs are kept on low-lying or badly-drained sections. As the treatment for the disease is so well known, it is regrettable that owners do not always apply the treatment early enough to prevent losses.

As a result of the amendment to the Stock Act it is very seldom that an affected pig is seen in the saleyards. Very few affected pigs are sent forward to the works for slaughter.

STEPHANURUS DENTATUS (KIDNEY WORM OF THE PIG).

One animal was found affected with this parasite when killed at the works. The animal was an old sow, and, although the case was followed back to the farm, it was not possible to trace the source or origin of the infestation as the original owner had left the district.

The possible introduction of the parasite from outside, together with its possible spread amongst pig-keepers, is being closely watched at all times.

ZINC POISONING.

Several mortalities in pigs during the year were investigated and found to be due to zinc poisoning. In almost every case new premises were being erected and new galvanised pipes were used for conveying the milk to the piggeries.

As this danger from the use of new pipes has been referred to in articles in the "Journal of Agriculture" on many occasions, the mortalities should have been avoided.

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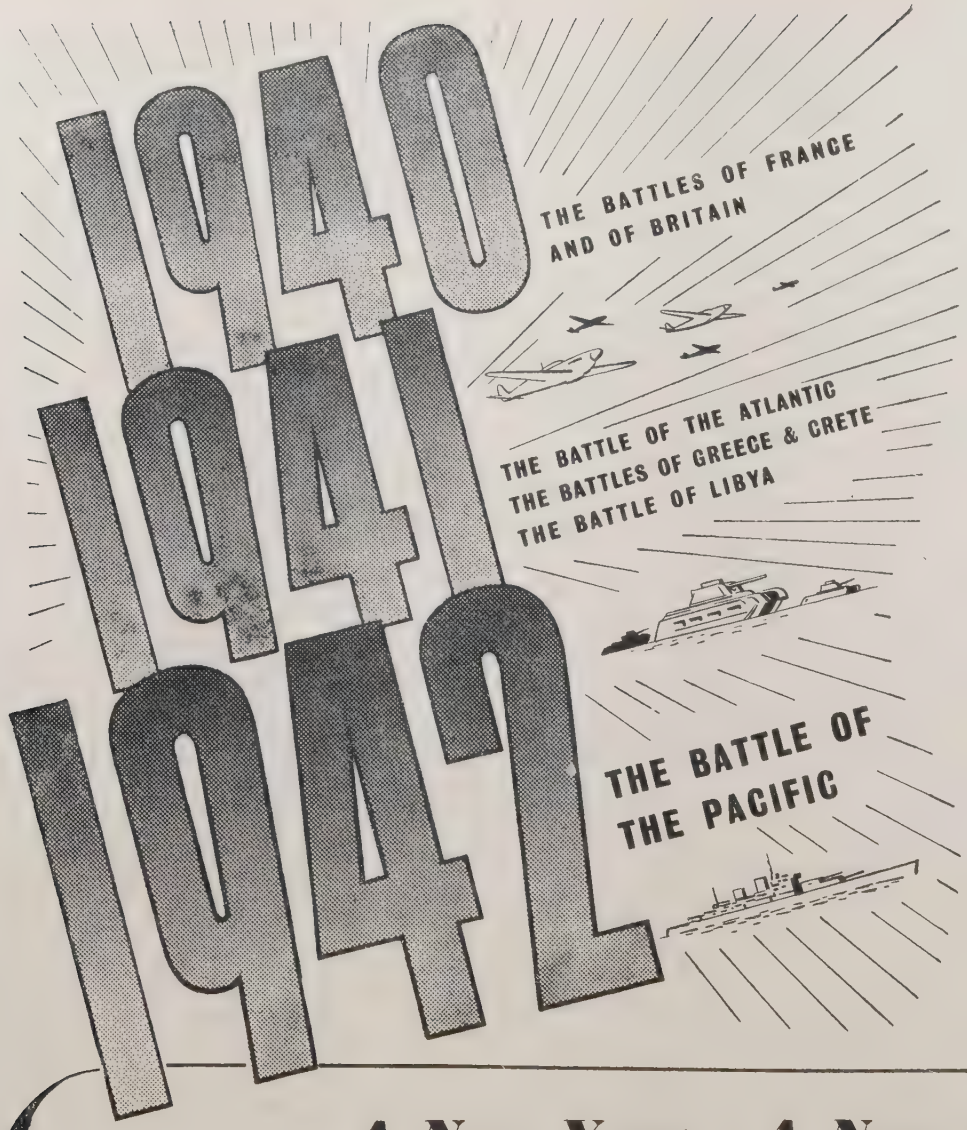

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Answers to Correspondents

Death of Lambs

V.L.J. (NGARUAWAHIA):—

I was interested in your instruction to sheepmen in regard to method and care when docking lambs, and also to your reference to pulpy kidney. From your descriptions there is no doubt our losses are identical with what you describe as pulpy kidney. I have no knowledge of pulpy kidney, although I have looked for it. We lose from 20 to 30 lambs every year from three to six weeks old; as you say, "the best and well grown." All of these that I have opened and examined have one or two balls of wool as big as a walnut in the paunch. This has caused severe inflammation of the bowels, and I think was the cause of death. Of course I may be wrong. I am still investigating.

There is another matter I would like to refer to. We lose as many as 5 per cent. that are dropped dead, seemingly well developed and full-time lambs; some of them seem abnormally large. I am not taking into consideration undeveloped and slips, which also amount to another 5 per cent. I cannot understand why there should be so many well-developed lambs born dead. Our ewes were very well done this year; more feed would not have been good for them. I notice the trouble I refer to occurs most in topdressed country where the sheep congregate together. Perhaps we should use more mineral licks. We put licks out but most of it is spoilt by the rain. I think some enterprising firm might put a good lick container on the market.

LIVESTOCK DIVISION:—

The loss of your good lambs aged between three and six weeks was in all probability due to the disease known as pulpy kidney, more correctly known as entero-toxaemia. The technical name means the absorption of poisons from the bowel, and this is exactly what occurs in these cases. The poison is generated by a specific bacillus. One cannot agree with the wool-ball theory as to the cause of death in these cases. It has been noted repeatedly that lambs harbouring wool balls in the paunch or even in the second stomach have fattened well and have been found to contain the wool balls when slaughtered at the works. An occasional death might result from mechanical obstruction by a wool ball, but the death would be a lingering one with evidence of sickness in the affected lamb for a few days. On the other hand, the death from pulpy kidney is very sudden. Convulsions may be seen in rare cases, but in the majority of cases the lambs are found dead, having shown no symptoms of sickness or delayed illness.

This spring season more deaths from pulpy kidney disease have occurred in North Island flocks than in other more normal years. Perhaps lambing has been later than usual; at any rate, when deaths occur from this disease it is evidence that the ewes are doing the lambs particularly well and that plenty of feed is available. No doubt several North Island owners will now consider the advisability of vaccinating their ewe flocks in order to prevent this loss of lambs in a subsequent season. Where the loss of lambs is on the average below 1 per cent. in a flock (you do not state the size of your flock) it may not be an economical proposition to procure the vaccine and go to the trouble of twice yarding the ewes for the purpose of giving the two doses of vaccine necessary for the protection of the lambs. This is a matter mainly for your own decision.

It is most difficult to advise in regard to the birth of large, well-developed lambs which are stillborn. I would suggest, however, that the most probable explanation in this case is the delay at the time of birth of the lamb. It is possible that you have been doing your ewes rather too well,

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and that ewes carrying single lambs have exceptionally well-developed lambs at the time of birth. If prompt assistance had been given to each ewe in difficulty at lambing time, some of the lambs might have been saved. In such cases any undue delay in delivery because of the large size of the lamb would result in the suffocation of the lamb when the navel cord has ruptured. It is realised that it is often difficult to know when assistance should be given and when the ewe should be left alone. The same close attention to each ewe cannot always be given in a busy lambing season when labour is not easily obtained No doubt your rounds include the usual, late at night, early morning, and at all other possible times. If you give serious consideration to this aspect of the matter in a future season it is possible these losses may be considerably reduced.

I do not think mineral licks have any bearing on the matter. You advise that the ewes did very well, and that the ewes were fond of grazing on the topdressed pasture where the mineral matter in the pasture would be available for the strong, well-developed lambs seen at birth. You advise also that some of the lambs seemed abnormally large. If so, then it is quite reasonable to suppose that there was some delay at the time of birth of abnormally large lambs, thus supporting the theory put forward.

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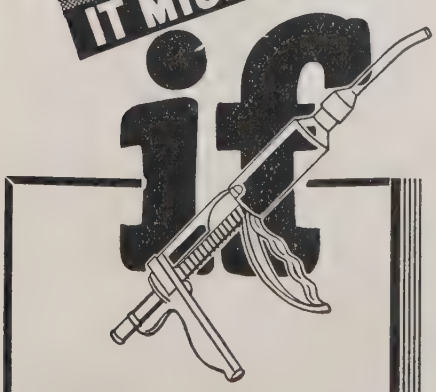

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Scab on Cow's Teats

"TREPOLPEN" (ASHBURTON):—

Could Departmental officers assist me in the difficulty as desribed below?

I have a heifer that started her first lactation about a month ago whose four teats always grow over at the point after every milking and are not easy to clear again, as the growth extends a little way up the teat. I adopted the practice of inserting small plugs of wood, which are first set alight, the char wiped off and then dipped in medicated petroleum jelly. This treatment is fairly successful, but has not effected a cure, as if I leave the plugs out for a time the scabs grow over again. The scab or growth is similar to that which forms on any flesh wound when it begins to heal. I have not used any cutting instrument on the teats. When plugs are used heifer is easy to milk, but when not used, or if they come out between milkings, it takes almost an hour to milk her.

LIVESTOCK DIVISION:—

Your heifer is most probably suffering from the disease known as black pox, which is caused by a soil organism. Your plan of keeping the end of the teat open is very necessary, as the scabs form very quickly, and are difficult to remove, but instead of

using a piece of wood, you should use medicated teat bougies; these can be obtained from your chemist.

The heifer should be milked after the rest of the herd, and you should thoroughly wash your hands before and after each milking, which might be done three times daily.

Either of the following preparations will be useful in keeping the scab soft, and relieving the trouble:

(1) 3 per cent. solution of salicylic acid in glycerine.

(2) Salicylic acid 2 drams, benzioc acid 1 dram, lanoline 6 drams, petrolatium 1 ounce.

Applications should be made after each milking.

Aftermath of Milk Fever

J. D. (METHVEN):—

Someone has told me of a cow, shortly after calving, suffering first apparently from milk fever and being treated for it without getting her on her feet, and secondly for "tail worm" (or "worm tail" he called it). My informant says that someone treated the animal and got it on its feet. Can you please tell me what the malady is, and what the treatment is?

LIVESTOCK DIVISION:—

It is frequently noticed that cows, after being treated for milk fever, regain consciousness but do not get on to their feet. This loss of power is a form of paralysis due, most probably, to some injury of the nerves supplying the region of the hind quarters and legs. This paralysis may last for a very variable time, from a few days to as long as several weeks, and some cows do not ever get up..

In the old days this paralysis was attributed to the presence of a worm in the tail, and the treatment was to make a cut in the tail and take out a piece of sinew, which, when extracted, looked like a worm; hence the name "worm tail." If the cow got up after this so-called operation it was because the paralysed nerves had recovered their functions, rather than the result of the alleged worm removal.

The best treatment for paralysis is good nursing, assisted by the application of some stimulating liniment along the spine and more particularly in the region of the loins.

Advisory Service on Veterinary Matters.

Farmers are invited to submit inquiries connected with the health of their stock, and the replies will be published under this heading.

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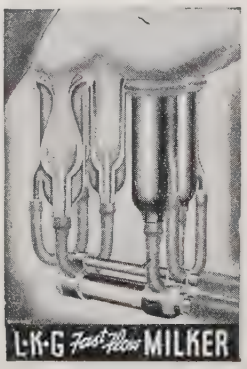

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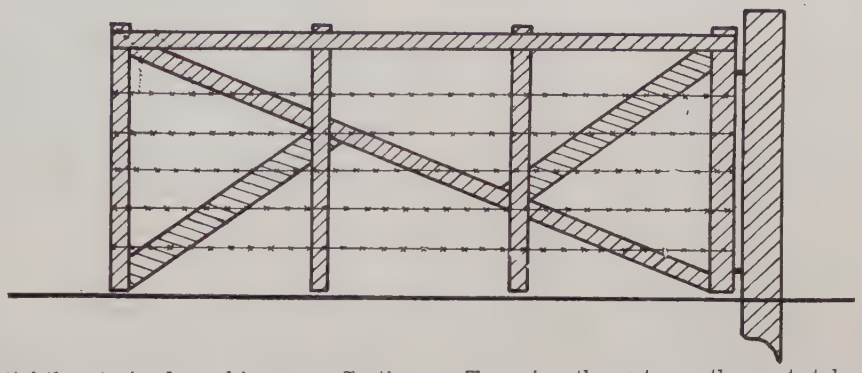
In Defence of Wire Gates

AN interesting article which he has entitled "In Defence of Wire Gates" has been received from a farmer, Mr. J. Johnstone, Manurewa, Auckland, who describes the type of wire gates he uses on his farm. An officer of the Fields Division inspected these gates, and he states that those he saw had been in use for about twelve or fifteen years, and had not ' been knocked about by the stock. He adds that the gate described can be constructed cheaply, and certainly has its advantages where a farmer has not the finance to provide the railed gates.



It may be that the "Taranaki" gate is, as Mr. N. E. Britton says in the October "Journal," an "abomination," but it remains true that in modern fencing wire has supplanted rails, writes Mr. Johnstone. Rails are heavy, easily broken by stock, far from durable and enormously costly. Wire is light, cheap, durable, immensely strong, and, if armed with barbs, a material that stock will leave severely alone. Why deride wire for use in gates while using it exclusively for all the rest of the fence?

No reason exists why a wire gate should be less convenient to operate than a clumsy mass of perishable timber. On the contrary, a properly-constructed wire gate is far easier to hinge, and is more convenient to operate than the ordinary timber gate, because it is far lighter and far less affected by wind.

The accompanying diagram shows a gate in which barbed wire is used in place of rails. The uprights are 3 in. x 2 in., with the exception of the one at the hinge end, which is 4 in. x 2 in. The long diagonal stay is 3 in. x 2 in., and the two short ones 4 in. x 1 in. The top bar is 3 in. x 1 in. As all four corners of the gate are fixed in relation to each other, the wires can be tightly strained, making an effective barrier to stock.

As the gate is light, ordinary fencing wire will serve for hinges. Bore two ¾ in. holes through the 4 in. x 2 in. upright where the hinges should be, and also through the post. Take two pieces of wire about 18 inches long. Double each piece by bending at the centre and placing them together. Thrust the four ends through the hole in the 4 in. x 2 in., and bend down and staple on the opposite side. This leaves a double wire loop projecting a very short distance on the post side of the gate.

To swing the gate on the post, take two slightly longer wires bent in the same way, thrust the two ends through the wire loop on the gate, and then thrust all four ends through the hole in the post, draw tight, and staple on the back of the post. The process is the same for top and bottom hinges. Hung in this way, the gate will be securely fastened to the post, and will swing freely on its hinges.

This gate is easily and cheaply made, it is convenient to operate, and stock will leave it alone. It is a common-sense gate.

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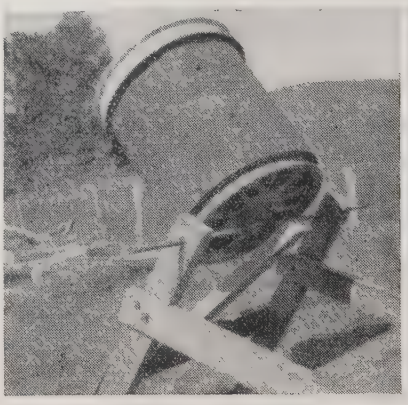
Farmer Makes His Own Concrete Mixer

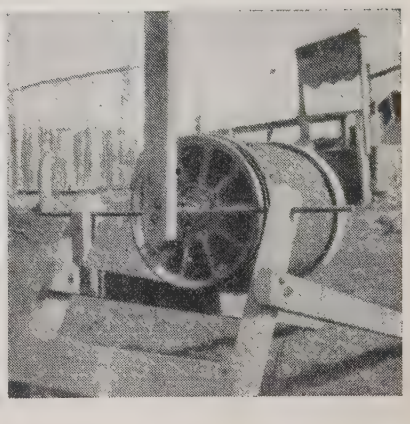
MOST farmers have some concrete work to do, but in many cases not sufficient to warrant buying a concrete mixer. An efficient machine, as seen on the farm of Mr. M. Lepper, Stratford, can be made with a minimum of outlay.

A discarded front wheel of a motor-car, complete with stub axle, is fixed to the bottom of a 40-gallon molasses drum which has been cut down to two-thirds of its normal size. The hub of the wheel projects into the drum through a hole cut to accommodate it, while the tyre rim is bolted to the top of the drum to give added support.

A bar of iron is fitted through the stub axle in place of the king pin and keyed to it. The whole is mounted on a suitable wooden stand, while a lever, bolted to the iron bar, acts as a means of emptying the mixer and also holds it in position while in use. The drum thus rotates on the ball bearings of the wheel, and is turned with very little effort.



The mixer in position for mixing.



The mixer in position for emptying.

Three pieces of angle iron, bolted in a vertical position at intervals to the inside of the drum, act as baffle plates and ensure better mixing.

—G. A. BLAKE, Instructor in Agriculture, Stratford.

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are constantly reaching us about the utility, the time, and the money, which

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Using a Simplex Concrete Post Mould, one man can, without help, make 100 6ft. "for all time" posts a day (an expert can do 20 an hour). Taking cement at about 7/- a bag delivered, and reinforcing rods 25/- per cwt. you can, if you have gravel and sand on the farm, make 100 or more at about 1/5½ a post. Even good broadleaf posts would cost nearly that —many localities much more. The Simplex Concrete Post Mould is easy to handle, weighing only 28 lb. and is made for long life. Produces 5ft. 6in. and 6ft. posts. Hinged side and end allows easy, rapid removal without fracturing the post.

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Home-made Sugar Beet Lifter

A CONSIDERABLE acreage of sugar beet is now grown by dairy farmers for the winter feeding of pigs, and on some farms several acres of this crop are put in each year. As sugar beet grows deep in the ground, the roots are not easy to lift, and when grown overseas for the sugar industry various types of sugar beet lifters are used to help in the easier harvesting of the crop.

The sugar beet lifter designed by Messrs. W. Moynihan and Clough, Shannon.

Mr. W. Moynihan, a farmer of Shannon, who has grown several good crops of sugar beet, including six acres last year for his pigs, set to work with the local blacksmith, Mr. Clough, to design a lifter. The result of their experiments has done a good job in this year's crop. As the implement passes down the row the roots are thoroughly loosened by the upward lift of the blades, but are not otherwise disturbed. Pulling is then quite easy. Enough sugar beet for several days' feeding out can be loosened in a very short time with such an implement.

One of the chief difficulties in the use of an implement such as a sugar beet lifter is the fact that the implement is required for only a short time each season. The implement illustrated can, however, be used with suitable attachments as a double horse hoe or as a ridging plough. When used as a horse hoe one of the horses has to walk down each alternate row after hoeing, which is a disadvantage in damp conditions or on heavy soils.

Although designed for sugar beet lifting, there is no doubt that such an implement would also be very handy where swedes or carrots are grown extensively for feeding out. The designers of the beet lifter will be pleased to give interested farmers further details of the implement.

—G. S. ROBINSON, Instructor in Agriculture, Levin.

Do Fertilisers Influence Grass Grub Attack?

THE New Zealand grass grub (*Odontria zealandica*) is credited from time to time with a discriminating appetite in his likes or dislikes towards variously topdressed pastures. That this claim appears to be largely mythical would seem to follow the recent observation of a severe and general attack over all plots of a duplicated manurial trial sown to ryegrass and white clover.

What was noticed, however, was that plots dressed with the fertiliser to which the pasture made best response —in this case a dressing of lime and super—showed relatively quick and

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satisfactory recovery, while the other plots made but tardy headway and evidenced permanent injury.

The lesson of this observation seems plain—suitable fertiliser, consolidation of the remaining grass with hoof or roller, and possibly oversowing with further seed or the feeding out on attacked grassland of hay from other good quality pastures.

—D. M. E. MERRY, Instructor in Agriculture, Nelson.

Answer to Correspondent

Creosote for Fence Posts.

R.J.C. (LUMSDEN):—

Could you give me some advice about creosote? I have perhaps 1000 larch trees between 50 and 60 years old. A fire has killed most of them, and perhaps creosote would make them into good posts.

What is the cost of creosote, and how much is a post likely to absorb? Where could one obtain it? How long would a post need to be immersed in it? Also, what sort of tank would you recommend? Would it be better shallow or deep?

FIELDS DIVISION:—

At the outset it should be understood that creosote is used to prevent decay in timber and not to cure decay that has already set in. Consequently, timber that is to be treated should be clean, sound, and well seasoned. As your trees have died because of fire, and not knowing when this took place, it is quite impossible to judge whether they will be in a suitable condition for treatment.

In the event of their being suitable, the following information should be of assistance. All bark should be stripped off timber that is to be treated. The treatment may be carried out with the timber in either vertical or in a horizontal position, a bath for the latter being more expensive to construct but much more rapid in operation. Nevertheless, a vertical bath is quite satisfactory for posts. A suitable container for this purpose is a 90-gallon oil drum with the top removed. For treatment this container should be filled with about 40 gallons of creosote. This should be placed over a fire trench and heated up to a temperature of 200 degrees Fahrenheit.

The posts should be placed in the tank, base down, and left there a sufficient time to ensure later penetration of the creosote to a depth of at least one inch. The fire should then be withdrawn and the posts allowed to cool off. The posts are then upended and treated for a shorter period. If two baths, one hot and one cold, can be provided there is, of course, no necessity for the fire to be withdrawn, and the treating process will be continuous.

As timbers vary greatly, it is not possible to give a definite time by which absorption will be sufficient. This should be ascertained by examining the depth of peneration subsequent to drilling auger holes. The rate of absorption of larch is very slow, however, and the two baths may take eight and 16 hours respectively. With the foregoing treatment a post 6in in diameter and 6ft. long will absorb approximately half a gallon of creosote.

Creosote costs about 3s per gallon, containers and transport being extra.

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Managers Farmers' Taxation Service, with over 10,000 subscribers in Auckland Province.

Orchard Notes

Handling the Pip Fruit Crop

FOR the balance of the season fruitgrowers' time will be fully occupied with the harvesting and handling of the pip fruit crop, but growers should not neglect the lead arsenate sprayings for the control of codling moth and leaf-roller caterpillar, keeping the fruit well covered with the spray to within a short time of harvesting. This will apply mainly in northern districts, where much activity is found with these pests, especially during the warmer periods of February and March.

If red mite is still prevalent it will be necessary to make another application of summer oil at strength 1:100, arranging the spray programme to allow from ten to twelve days' interval between sulphur and oil sprays. The bronzing of the foliage is usually an indication of the presence of red mite, and when noticed, no time should be lost in applying the spray. The eradication of red mite at this period will prevent a heavy deposit of winter eggs.

Where humid conditions prevail, it will be necessary to apply sulphur sprays for the control of fungus diseases. Black-spot may become troublesome during this period on late varieties of apples, such as Statesman and Dougherty, especially if suitable weather conditions prevail, and an application of lime sulphur at strength 1:200 or colloidal sulphur at strength 2:100 will act as a preventive. Where bitter rot has been in evidence the previous season, Bordeaux mixture at strength 1½:3:50 should be used instead of sulphur.

Harvesting

Shortage of labour may have an effect on harvesting operations this season, and there may be a tendency to rush the work, but every effort should be made to deliver fruit to the marketing points in the best possible condition so as to ensure the supply of a standardised product to the consumer. Indications at present point to a large crop of apples and pears, and large quantities will probably have to be placed in cool store for late marketing, so that more than ordinary care is necessary by the grower to eliminate any fruits that will affect the keeping qualities.

Orchard storage may be necessary in some districts, and care should be exercised to see that a very large percentage of the fruit so stored will be in good condition for marketing when packed at a later date. Only good, sound fruit with no blemishes should be orchard-stored; full consideration should be given to position of storage, ventilation, and covering of the stacks of fruit to prevent wilt. Periodical inspection will show whether fruit is keeping well under orchard storage conditions.

Picking

Injury to fruit when picking will cause rots which show up some time after the fruit has been packed, reducing the market value. Stem-end rots, caused by injury when picking, indicate that the fruit has been pulled from the tree instead of being severed at the junction of stem and spur. This is especially noticeable when fruit has been cool-stored for a time, and soon leads to the total collapse of the fruit.

Maturity is important at picking time, depending on whether the fruit is to be marketed at once, orchard-stored, or cool-stored. For orchard storage, fruit should be picked well before a fully matured condition is reached, while fruit for immediate marketing should be allowed to remain on the trees to become tree-ripened. To get the best out of a crop, two or three pickings are necessary, the selected fruits at each picking depending largely on size and the stage of maturity. Examination of fruit some time after picking often reveals considerable injury from finger-nails, and a little instruction to pickers on this point will often prevent such injury. In no circumstances should fruit be allowed to drop heavily into the picking bags; the bags should not be overfilled; and the fruit should be carefully emptied from picking bags to cases and transported to the packing shed with the least possible delay. The transfer of fruit to the packing shed or storage position as soon as possible after packing is essential.

Grading

Care in fruit grading cannot be overemphasised. Standards are set for each grade, and any failure by growers to separate fruit into the respective grades is not in the interests of standardisation. The elimination of all diseased, deformed, or badly russeted fruit, or fruit with any other defect, is necessary, after which consideration should be given to the colour requirements and blemish restrictions of each individual grade. The inclusion of a small quantity of inferior fruit in a higher grade is often sufficient justification for rejection. To prevent grader markings on fruit, grading machines must be kept clean and free from dirt, especially those parts which come in direct contact with the fruit.

Rail Freighters Must Co-operate

Release Wagons Quickly

The demand for railway wagons remains pressing and continuous. Their ready availability is urgently, vitally necessary for immediate distribution of the materials so necessary to our security and safety. Every rail freighter must concentrate upon rapid release of wagons . . . THE NEED IS NATIONAL.

Efficient Transport Aids National Security

Grader markings usually show up some time after the fruit has been packed, and the fruit presents a very poor appearance when placed on the market. Colour requirements for each grade should be carefully studied, and only fruit fulfilling the requirements of one of the three grades should be placed in that grade. Colour standards differ with the different varieties and are divided into classes known as solid red, partial red, striped or green, and each variety should be colour-graded according to its classification.

Packing

No fruit can be properly packed unless it is sized correctly, and in no case should there be a variation in size of more than ¼in. The pack should be sufficiently firm to withstand the many handlings from packing-shed to market, but not so tight as to cause bruising. Packing on the angle is a common cause of bruising, and should not be practised. With the fruit properly sized and packed on the pocket system, each layer being consolidated as the packing proceeds and the ends pressed down to avoid any chance of bruising, a firm pack will be obtained with the least amount of damage resulting. Slack packing is often the result of incorrect sizing or the wrong pack being used for that size of fruit. While a bulge is necessary to secure firmness and to allow for shrinkage, it should not be so high as to cause damage to the fruit when lidding.

Attention should be given to nailing down the cases and to correct marking and labelling in order that the finished article may present a good appearance and create a favourable impression.

Packing Shed Hygiene

The cleanliness of the packing-shed is important. Reject or decaying fruit should be disposed of immediately and not allowed to remain in or near the packing-shed to become a source of infection to good fruit. Grading machines should be regularly cleaned. Under existing conditions it may be found necessary to use old or second-hand fruit cases which would otherwise have been destroyed, and if so, it would be advisable after reconditioning them to spray or dip them in a solution of blue stone to prevent any fungal spores being spread to the fruit.

—G. STRATFORD, District Supervisor, Dunedin.

Citrus Notes

Water Supply in the Orchard

AS I gazed out of the railway carriage window upon the burnt hill slopes of tea-tree and bracken fern, I heard the man in the seat behind turn to his wife and say: "Poor country here, but I suppose it could be brought in with super and lime." That set me thinking, and I nearly turned to him and said: "I'm afraid I don't agree." Here was a piece of land, originally in bush, now steadily deteriorating through annual burning of the scrub. The wider question is: "Hasn't the average man on the land, citrus grower included, been inclined to place too much emphasis on artificial fertilisers and manures?"

During the summer months the practical citrus grower must consider the question of water supply. A soil which can use rainfall to maintain the optimum supply of moisture to the tree generally repays the costs of cultivation and manuring, whereas soils which suffer from an excess or a deficiency of moisture, or an alternation between these two, are generally waste lands. They do not repay generous treatment, and therefore usually have a low plant nutrient status.

Soil fertility is not merely a matter of abundant supplies of nitrogen, phosphorus, and potassium; nor can infertility be cured simply by loading farmyard manure and artificial fertilisers into the soil. Rather does soil fertility consist in the favourable operation of a number of factors, and of all these factors affecting plant growth, water supply probably has the greatest weight in deciding the differences in the crop-producing ability between one soil and another. In any scheme for the purchase and sale of citrus fruits founded on a uniform price per case the key to success is crop per tree. If, then, available water is the determining factor in yield per tree, this factor must be given very serious consideration.

Water is absolutely essential to successful citrus production, but it is especially necessary as the young fruits set. A citrus tree needs as much water as it can get, provided the soil is not so saturated with water that

Reminders for Month:

Conserve soil moisture.
Mulch the citrus trees.
Check weed growth.
Do not over-cultivate.
Order requirements of summer oil.
Continue budding—choose buds from outstanding trees.
Continue pruning — giving particular attention to dead wood and sucker growth.

HESKETT SLAG

Many soils of high-rainfall parts of New Zealand lack Lime, and contain large quantities of Iron and Allumina, which rob the farmer of about four-fifths of every ton of Water-Soluble Phosphates spread on these soils; a Basic Slag contains, among other minerals, large quantities of a non-acid chemical compound known as Calcium-Silico-Phosphate which, it is claimed, has the power of unlocking these dormant minerals from the soil. The phosphates of a Basic Slag cannot be locked up by these soils because they are already combined in a form easily digested by the root acids as they need them.

Made in New Zealand for New Zealand Soils.

Finely ground and packed 18 bags to the ton, it is delivered f.o.r. Huntly, Waikato. Obtainable from Merchants and Dairy Companies or from the Chief Distributors—

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the air supply is deficient. It is not so much the total rainfall per annum that is important, but rather its equitable distribution throughout the year. No grower, however, can control rainfall, but, given a suitable soil, he can conserve the rainfall by certain cultural practices, such as mulching, hoeing, discing, and cover cropping.

Of the rain that falls on a citrus orchard, part evaporates, part runs off the surface, often carrying soil particles with it, which results in soil erosion, and part enters the soil. Only that water which enters the soil and is retained there until required is of value to the citrus tree. The degree to which a soil is able to conserve moisture depends very largely upon its humus-content, humus being that portion of the organic matter of the soil which has become structurally unrecognisable. It is important because of its water-holding properties, and also because it is the seat of activities of the soil micro-organisms. This important soil constituent will be discussed later, but during the summer months remember that over-cultivation and the fetish for a weedless orchard or destruction of humus is a mistake. As they transpire large quantities of water, weeds require to be suppressed by mowing or light discing rather than by too much harrowing.

—A. M. W. GREIG, Citriculturist, Auckland.

Cool Storage Notes

Handling Fruit in the Cool Store

EVERY delay which occurs in the transportation of fruit from the orchard to cool storage increases the possible risk of some being in such an advanced stage of maturity that the outturn will be detrimentally affected and the period in which it can be held in firm, sound condition will be reduced. Pears, in particular, should be delivered to the cool store as soon as possible after they are harvested in order that the flesh may be reduced to the required temperature in time to check the maturing process before it becomes too advanced. The dates of harvesting and storage of each consignment should be recorded, as this information is essential to a study of the season's storage results.

The most reliable method is to harvest the fruit and deliver it immediately to the cool store loose in boxes. This will eliminate the delays which occur when, due to shortage of labour or loss of time at weekends, sizing and packing are carried out before pears are placed in cool storage. The effect of these delays cannot be detected until the more mature fruits begin to change colour after they have been held for a time in cool storage. Fully-grown pears which are harvested in a green, firm condition and are handled carefully and immediately placed in cool storage loose in the boxes should store for a considerable period. Any fruits which have developed faults during storage may be readily detected and rejected. This method ensures that pears are sound and of uniform maturity in the cases when packed. A mixed state of maturity in packed pears should be avoided as far as possible, as it is likely to result in losses, and will increase the overhead costs through much of the fruit having to be repacked.

Stacking

By carefully stacking fruit in cool chambers, giving methodical attention to the running of the refrigerating plant, maintaining uniform chamber and flesh temperatures and the relative humidity necessary for fruit storage, and paying regular attention to ventilation, excellent results can be obtained with fruit held until late in the year.

The method of stacking fruit is important. Tight stacking and crossing of the cases in the stacks should be avoided; otherwise rapid advancement in maturity will occur, together with the development of ripe spot, soft rots, and general deterioration. Passageways should be provided between the stacks to facilitate handling and the inspection of fruit.

Dunnage

Floor battens 3 in. x 3 in. or 1½ in. x 1½ in. should be permanently fixed to the floor. The cases should be placed across these battens, allowing sufficient space for at least one inch of uninterrupted air space between the ends of each row of cases. This will give the circulating air ready access to the air spaces provided by the bulge in the packed cases, will ensure a more rapid rate of cooling, and will also minimise fluctuations of the chamber temperatures. When the direction of the forced air circulation is from end to end of the cool chamber, additional 1 in. x 1 in. battens should be placed longitudinally in the direction of the air circulation between each second tier of cases.

Where convectional air circulation is provided from ceiling coils under which drip trays are suspended, the fruit cases must not be stacked within 5 inches of the bottom of the drip trays, nor should they be placed hard up against the walls of the chamber.

Ventilation

Proper ventilation should be provided by blowing out the air at regular intervals, preferably on cold, frosty mornings, for periods of from ten to fifteen minutes two or three times weekly, as required. On no account should cool chamber doors be left open for long periods, or excess moisture, condensing on the cold surface inside the chamber, will encourage dampness and mould growths, which detract from the appearance of the packages and are detrimental to the contents.

—A. A. POWELL, Cool Storage Officer, Wellington.

SCOTCH WHISKY

"BLACK & WHITE"

It's the Scotch!

Guide for the Home Garden

February Work in the Home Garden

THE time is now approaching when the first fruits of the outdoor tomato vines will be ripening. In gardens where there is abundant cover for birds, particularly thrushes and blackbirds, tomatoes should be removed as soon as they begin to change colour; if not, the birds will destroy them by picking into one after another of the whole truss.

The change is determined by the natural green colour of the fruit turning to that of a slight yellow-red, but however little the change in colour, the tomato, if removed from the vine, will ripen. When picked in this colour-changing condition, fruit should not be placed at a window or any situation exposed to the fierce heat of the sun. Placed in or on a kitchen dresser away from the strong sunlight, but where a reasonably comfortable temperature obtains, the tomato will mature perfectly.

As soon as the bottom truss of fruit has been removed, regular weekly applications of liquid manure may be necessary to maintain balanced growth of the plant while the remainder of the crop is developing. To secure maximum results, regular cultivation and spraying are essential.

Removal of bottom leaves from the plant will do no harm, provided the fruit is not unduly exposed. Should the foliage midway up the main stem appear to be too dense, a few of the larger leaves, at intervals, may be cut out. The practice of almost denuding the plant of foliage should not be adopted, as this will tend to produce a tough outside skin on the tomatoes, and will considerably impair the flavour.

Spring Cabbage

Seed should now be sown for Sutton's Flower of Spring cabbages for spring cutting. If sown in rows in a seedling box, sufficient plants can be raised to satisfy the requirements of most home gardeners. As soon as the young plants appear above the soil protective measures must be taken to combat the activities of the cabbage fly and caterpillars. During February these two omnivorous pests are very destructive, and the use of one or more insecticides is specially recommended. Nicotine sulphate, arsenate of lead (powder form), and Derris should be used as directed by the instructions, which are usually printed on the container. If nicotine sulphate is used, it is advisable to apply it during the hottest part of the day.

Pumpkins

When the runners of pumpkins and other gourds have reached a length of 4 ft. the centre growth may be cut out. The result will be the production of more laterals, with a consequent increase in the crop. As pumpkins, etc., are gross feeders, increased and vigorous growth may be expected from weekly applications of liquid manure. To obtain a ripe crop for winter storage, the plants must be induced to develop the gourds as quickly as practicable so that maturity may be reached while the weather is favourable for good growth. As large, heavy pumpkins will sometimes start to rot while resting on the ground, it is advisable, where possible, to rest them on a piece of wood. If, however, the plants are trained on a wire fence (as is often done) the gourds can be suspended by strips of flax or binder twine.

The plants are likely to be attacked by aphis, particularly during prolonged spells of dry weather. These insects usually appear after mid-season, but soon enough to impair the production of a full crop. Indications of the presence of aphis are manifested by the curling of the leaves, which turn to a brown withering colour and die. Control is effected by the use of nicotine sulphate, either as a spray or as a dust.

Potatoes and Savoy Cabbages

Matured potato crops may now be dug, and, in favourable localities, it is not too late to set out a few well-grown savoy cabbage plants. If it is not convenient to dig and store the potatoes, the tops may be cut off and the cabbage plants set between the rows. Should this be done—and it is quite practicable—care must be exercised when digging the potatoes to see that the roots of the cabbages are not interfered with.

Before setting out the plants, the largest leaves may be cut in half and the remainder of the green part of the plant dipped in a mixture made as follows:—

½ oz. of arsenate of lead (powder form).
2 oz. of hydrated lime.
1¼ gal. of water.

In addition to keeping plants well watered, a fortnightly application of nitrate of soda in solution at the rate of 1 tablespoonful to 4 gallons of water may be made. This treatment, combined with adequate protection against insect attacks, will assist the plants towards development until the advent of cooler weather. The use of fertiliser before planting is assumed, and blood and bone applied at the rate of 2 lb. to 26 ft. of row will supply the necessary quantity.

Seasonal Dont's

Don't

turn under perennial weeds. Dig them out and burn them.

Don't

allow any part of the garden to be without a crop. If not planted with a vegetable crop, dig over and sow to a cover crop. When dug, the humus-content of the soil will be increased and depleted fertility restored.

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What To Do In The Garden Next Month

Summary of Operations During February

VEGETABLE SECTION.

SUCCESSIONAL SOWINGS UNTIL MID-FEBRUARY.

Peas (dwarf variety); lettuce. Unless plenty of water is available, sow lettuce where the crop will grow to maturity. Spring onions (White Lisbon); turnips (Milan, Snowball).

OTHER SOWINGS.

For winter use: Endive, lettuce, spinach. For spring use: Carrots (Earlykrop, Early Short Horn); spring cabbage (Sutton's Flower of Spring); cauliflower (All-the-Year-Round).

SPECIAL NOTES FOR WARM DISTRICTS.

Sow dwarf beans till middle of February, also beetroot.

CROPS IN SEASON.

(The month in brackets represents the month in which the seed may be sown.)

Lettuce (June); radish (spring and summer); sweet or sugar corn (early spring, after frost-danger); tomatoes (outside-grown, late August); cucumbers (September); spring onions (almost any season).

Greens.—Beans, marrows, pumpkins (November; frost-free areas October). Peas (June, July, succession of main crop November); New Zealand spinach (October).

Roots.—Beetroot (September; in warm districts almost any season); carrots (November main crop); parsnips (early spring to early autumn); potatoes (after frost danger); onions (late March, early April); parsley spring or autumn); salsify (early spring); turnips (except winter).

GENERAL WORK.

Regular shallow hoeing will destroy weeds and conserve soil moisture.

Liquid manure is a stimulant, and should be applied weekly to quick-growing plants.

Do not permit seedlings to become overcrowded; thin out and transplant, if necessary.

Spraying is not a remedy for disease; it is a preventive. Neglect means disaster. If the seed is worth sowing the plants should be protected.

Liquid Manure

Liquid manure for application to vegetable crops may be made by using the voidings of cows, poultry, pigeons, or rabbits. The manure, 2 lb. per gallon of water, should be tied in a piece of sacking and suspended in the water. A half cask or a thoroughly cleaned oil drum will hold a reasonable quantity. In order to hasten the solution of the plant food which the manure contains, the bag may be deposited in the container and pressed with a piece of wood. Soot (1 lb. per gallon of water) may also be used as a liquid fertiliser if treated in the manner just described. Liquid manure should never be applied to a dry soil—always after a thorough watering has been given.

Green Manuring

Immediately a part of the garden becomes vacant, and is to remain in this condition for any considerable time, it should be dug and sown with seed to produce a green crop which will later be turned in. Legumes, such as peas, beans, or lupins, are generally favoured, but unless there will be sufficient time to allow for full growth, mustard or oats will produce a heavy crop of green manure to dig in which will assist in the retention of residue nitrogen that may be left over from the previous crop. If the humus-content of the soil is to be maintained, there is, in the absence of stable manure, no better method of achieving this result.

Hygiene in The Garden

It is important that no diseased refuse or crop residues should be allowed to lie about the garden. Healthy foliage —and this includes lawn clippings and tender hedge clippings—may be utilised in a compost heap, but remains of diseased crops should be destroyed by burning. This refers particularly to diseased potato haulm and pea or bean foliage which may be affected with virus and other diseases.

Plan the home garden for crop rotation, and the danger of vegetable diseases will be substantially minimised.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

Fumigation of the Glasshouse

LATE January should see the tomato season in glasshouses (unheated) almost finished. As soon as picking and marketing are completed, the vines should be dug out (not pulled out) and left hanging until properly dry, after which they may be removed outside and burned.

It is generally considered necessary in glasshouse hygiene to carry out fumigation as soon as possible after cleaning up has been completed. Fumigation is the most convenient and effective means of destroying insects which cause injury to glasshouse tomato crops. Broken glass must be replaced and all openings closed. An even or slightly rising temperature of between 60 degrees and 70 degrees F. is recommended during operation, and, to avoid wastage, a calm night should be chosen.

For effective results, refined sulphur at the rate of 1 lb. to 2,000 cubic feet of space is generally used, and the house is locked up for 24 hours. Greater quantities of sulphur are unnecessary because of the effect on paint, pipes, and wires. Empty glasshouses are sometimes fumigated for 24 hours with 1½ lb. of calcium cyanide to 1,000 cubic feet to destroy pests that may be present. A temperature of 70 degrees F. is recommended. Nicotine is also used to some extent, but, although safe and effective, it is invariably more expensive than other fumigants.

Hydrocyanic acid gas is such a deadly poison that its use as a glasshouse fumigant cannot be recommended.

After fumigation is completed and the house is thoroughly cleaned, the soil should be turned over and sown to a cover crop, which will later be dug in. The kind of crop which may be grown will depend largely on the condition of the soil. Repairs and renovations can be attended to before further planting is undertaken.

—D. K. PRITCHARD, Instructor in Vegetable Culture, Wellington.

Seasonal Work and By-products

THE evaporation and modification of nectar of flowers by the bees to form the final product of honey is called ripening. During the gathering and the storage of honey in the combs the bees add enzymes (contained in digestive juices) to the nectar, which invert or break up the large portion of the sucrose into the more easily digested sugars known as dextrose and levulose, and, in addition, the bees partially dehydrate or remove a large proportion of the water present by manipulating the honey with their mouth-parts and by circulating currents of air through the hive to evaporate the excess moisture.

During the honey season, when there is a heavy flow of nectar, this work goes on in the hives until the very late hours of the night, according to the amount of nectar gathered during the day, and may be observed by a heavy, continuous humming sound in the apiary until the work ceases for the night. The complete process of honey ripening by the bees requires a uniformly high temperature within the hive and adequate ventilation through the hive entrance. Any attempt by the beekeeper to provide open spaces between the supers would cause cool draughts, which would severely interfere with the normal process of honey ripening. It is therefore important that all hive parts are close fitting and that a wide open entrance is provided for all hives during the main summer honey flow.

Removal of Honey Crop

No honey should be removed from the hives to the honey-house for extracting from the combs during a honey flow before it is thoroughly ripened and capped over by the bees. If this rule is not adhered to there is a danger of taking honey from which the normal amount of moisture has not been removed, resulting in a lower-grade product which may ferment quickly when placed in storage for any length of time. It is also very important to keep all honey-house utensils as clean and sterile as possible. The wash bucket should be emptied and washed clean of every trace of honey each day, and the floor mops should also be attended to, otherwise they soon sour and become a source of active infection. Honey may also be spoiled by added moisture absorbed while the honey is exposed to a damp atmosphere or accidentally introduced by the beekeeper during extracting operations.

It is a bad practice to store full combs for any length of time during wet weather before extracting the honey, or to leave liquid honey exposed in open tanks, which should be covered and the contents protected against dust or a damp atmosphere. To obtain a good-keeping quality product, cleanliness, consistent with dry conditions wherever honey is exposed in all apiary and honey work, is essential.

Apiary By-products

There is no reason why there should be the slightest waste of honey that cannot be put up in good marketable condition to be disposed of in the ordinary way. Even the washing of the honey tank, extractor, and other vessels which have contained honey, as well as broken honey combs, can all be utilised in making honey mead and honey vinegar.

The following notes prepared by the late Isaac Hopkins, following experience of honey mead and honey vinegar making at the State Apiary, Ruakura, deal fully with the subject:—

Honey Mead

In making both mead and vinegar, I adopted the most simple methods in order that they might be readily followed by all classes of beekeepers. The ingredients in both cases are simply honey and water in different proportions. When properly made, honey mead at three years old is hardly distinguishable from first-class sherry, either in taste, colour, or aroma. Suitable casks should be procured, but beware of beer casks for mead. One cask should have the head out for fermenting purposes. Whatever quantity of mead is to be made, the cask or casks used to receive the liquid after the fermentation should be of a size that they will be full, leaving no space for air.

In all cases, both for vinegar and mead, use rain water if possible, as this is more free from minerals than well or spring water. To each gallon of water there should be added 4½ lb. of honey, but in the case of washings, a hydrometer should be brought into use. The specific gravity of the mixture is as near 1.115 as is required, so that if under that when testing the liquid, add more honey and if over add more water.

Put the mixture into the cask with the head out, add a little yeast, and cover the top of the cask with a clean sack. Where yeast cannot be readily obtained and is not added, the liquid will begin to ferment in a few days, but the yeast expedites it. Mead is best made under cover, but vinegar can be made outside. If it is intended to fill a 20-gallon cask, 21 gallons of the liquid should be set to ferment.

After fermentation begins, skim the liquid every day and then stir it well. It will be found that the scum gradually changes from a dirty brown to a snow-white colour. At this time the ferment will be slight, and the liquid can then be transferred to its cask. A small calico bag filled with sand should then be placed over the bung-hole. This allows the gas generated to escape from the cask without allowing the air to enter. The extra amount of liquid should be kept in a jar or bottles to use for filling the cask occasionally, which should be kept full.

After about four weeks or so, the sand bag may be removed and the cask securely bunged, but a spile hole should be first bored near the bung-hole and a spile about the size of a meat skewer inserted. This should be removed for a second or so every day for a while to allow the carbonic acid gas to escape. It may now remain undisturbed until the following August, when the liquid should be refined and transferred to a clean cask.

Refining Mead

Cut into very fine sheds some isinglass in the proportion of about 1 oz. to 30 gallons of mead and allow it to soak in some mead for two or three days, adding two teaspoons of tartaric acid. When in a jelly, rub the isinglass through a fine sieve until the whole is in liquid form; this is very important.

Draw off from the cask sufficient mead to allow the ripening mixture to be added, thus keeping the cask full. Bung up and leave the casks undisturbed for from fourteen to seventeen days, when the mead should be carefully siphoned off and put into a clean spirit cask. A rubber tube makes an efficient siphon. Tie the tube to a stick, so that when the end is lowered into the mead it is fully 3 inches from the bottom. The tube should not reach the bottom of the casks.

(*Continued on page 65.*)

Pullorum Disease, or Bacillary White Diarrhoea of Chicks

By F. C. BOBBY,
Superintendent of Poultry Husbandry, Wellington.

PULLORUM disease, or "B.W.D." as it is often called, is primarily a disease of baby chicks. Fortunately, it has not become a scourge in New Zealand, and furthermore, when it has occurred, Pullorum appears to be milder in form than is experienced in, say, England or the United States. The fact remains, however, that this disease is existent in the Dominion, and might easily become firmly established, even in a more severe form, unless steps are taken immediately to bring it under control.

Can "B.W.D." Be Easily Recognised?

It should be clearly understood that poultrykeepers are **not** in a position to recognise or diagnose "B.W.D." among chickens. The disease may be suspected, but only a complete laboratory examination can determine beyond doubt the presence of "B.W.D." in a chicken. It will be shown later that this disease is also carried by adult stock, but here again it is impossible to recognise its presence in a bird while still alive on the farm. In fact, it is possible to have apparently healthy birds in full lay carrying the germs of this disease. Poultrykeepers should not attempt, therefore, to recognise "B.W.D." in either their chickens or laying birds. Even the presence of a white diarrhoea does not necessarily mean that a bird is affected.

When to Suspect "B.W.D."

"B.W.D." is caused by a minute organism, the technical name for which is *Salmonella pullorum*. With infected laying birds, it is usually found only in the ovaries (yolks), and in most instances has no serious effect upon the bird. With chicks, however, the germs may spread to many of the organs, with fatal results. Certain chicks will recover from an attack of "B.W.D." and often then retain the germs, which finally become centred in their ovaries.

Is There a Cure?

The answer is an emphatic—NO! Any attempt to cure infected chicks or adult birds is a waste of time and money.

How Infection Is Spread

Infection in the case of baby chicks comes through the eggs at hatching time. Laying birds whose ovaries are infected are referred to as "carriers," and during the breeding season a certain number of their eggs carry germs of this disease. If these germ-infected eggs are hatched, then the resultant chicks are infected with "B.W.D." organisms. Should these organisms multiply, the chicks are attacked by the disease, and in most cases die, but before doing so will pass droppings laden with germs. These droppings may, in turn, infect other healthy chicks, and so the disease is spread.

It has also been established that adult stock "carriers" pass droppings containing "B.W.D." germs, and in this way a gradual increased infection may develop among a laying flock. It should be noted, however, that the poultrykeeper will see no signs of the increased infection, and will be totally unaware of this growing trouble. That trouble exists will become obvious only when mortality among his baby chicks becomes excessive.

Control of "B.W.D."

As there are no means of curing either infected hens or chicks, it is fortunate that there is a satisfactory method of detecting "carriers," which are responsible for spreading this disease. Once detected, these "carriers" may be removed from the flock and killed for table purposes. They are in no way unsuitable for human consumption. "Carriers" may be detected by what is usually called "blood testing" the flock, and this test may be made in two ways:—

(a) For the first method, it is necessary to have every bird to be tested leg-banded with a numbered ring. A small sample of blood is drawn into a glass tube from a vein in the wing, and a label on the tube is marked with the bird's number. Samples from each bird are forwarded to the laboratory, and the poultrykeeper is subsequently informed which numbers reacted to the test. The birds whose leg bands correspond with numbers given are then removed from the flock as "reactors," being, in fact, "carriers." This is known as the "tube test" method.

(b) For the second method, a large drop of blood is obtained from the comb or vein in the wing, and placed on a glass slide. To this blood is added a specially-prepared liquid referred to as "antigen," and within a minute or two the tester is able to say whether the bird is a "reactor" ("carrier") or not, according to the effect of the blood upon the antigen. This method is referred to as the whole-blood "rapid test." While satisfactory, this second method is not as accurate as the "tube test," but helps the poultyrkeeper in that less labour is involved and no numbered rings are required.

Poultrykeepers are strongly advised to "blood test" their birds once an outbreak of "B.W.D." has been diagnosed among their chickens. It is the only satisfactory method known at the present time of controlling and eventually eliminating this disease.

When to "Blood Test"

Assuming that an outbreak of "B.W.D." has occurred, the first essential is to blood test the breeding stock. This may be done **immediately** if the outbreak occurs at the beginning of a rearing season. In this way, further losses with chicks from "B.W.D." may be avoided during that season.

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Alternatively, all possible breeders for the following season may be tested just before the birds go into the annual moult. If the number of reactors proves to be high, then it is advocated that the remainder be retested after the moult to ensure the elimination of any reactors which failed to show up in the first test. This is the only effective way to control this disease.

Furthermore, it is a wise precaution to test, when on the point of lay, all pullets which have survived an outbreak of "B.W.D." The elimination of "carriers" at this stage appreciably lessens the chance of infection spreading among the adult stock. It is also strongly recommended that "blood-testing" be carried out for more than one year following an outbreak of "B.W.D." Poultrykeepers are warned that testing for one year only does not necessarily protect their birds from a further mild infection, which in time is likely to become serious again.

What To Do With "Reactors"

All "reactors" or "carriers" discovered by "blood testing" are, in fact, a source of danger to healthy birds. For this reason, the Department stipulates that they must not leave the farm **unless for killing purposes.** It is obvious that, if sold on the market or direct to another farm, such birds could easily be responsible for starting a fresh outbreak of this disease. If they are retained on the farm after a test has been conducted, then it is equally obvious that they must be kept quite separate from the tested or healthy stock. Carelessness in this respect can easily lead to a re-infection of the non-reactors or healthy birds.

Precautions

Apart from blood testing, there are certain precautions which should be taken when "B.W.D." occurs among chicks:—

(1) Remove as often as possible all dead and sickly chicks from the brooders. These should be destroyed by burning.

(2) Change the litter at weekly intervals for the first three weeks in all pens where the disease has appeared. This litter should be burned.

(3) Drinking vessels and hoppers should be kept clean and disinfected frequently during the first three weeks. The use of caustic soda and boiling water is strongly recommended for this purpose.

(4) No chicks from an infected brood should be allowed to mix with other healthy broods.

(5) An incubator which has hatched chicks subsequently proved to be suffering from "B.W.D." should be thoroughly disinfected (see notes on fumigation).

(6) All chick boxes which have carried baby chicks subsequently proved to be suffering from "B.W.D." should be burned.

(7) Pullets surviving an outbreak should be treated with suspicion, as there are almost certain to be "carriers" among such birds. On no account should these birds be bred from, either as pullets or hens, until they have been "blood tested." Such a practice would be helping to spread the disease.

Fumigating Incubators

There is ample evidence to show that "B.W.D." can be spread in an incubator during hatching time, more especially in cabinet incubators, where a fan is employed for forced air ventilation. Fluff and other dry material, which may be carrying disease germs, is distributed throughout the hatching compartment, and can in this way spread the disease to healthy chicks. To prevent this spread of infection, formalin (40 per cent. formaldehyde) may be used as a disinfectant at the time of hatching. Fumigation of incubators in this way is a method of reducing the spread of "B.W.D.," **but is not a satisfactory means of eliminating the disease from a farm.**

SPECIAL! January OFFER TO FARMERS and POULTRY-KEEPERS

Mr. Alan M. Doull was until recently Manager and Buyer of the Grain and Product Department of Messrs. Turner & Growers Ltd., and has an extensive knowledge, acquired over a period of 21 years.

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It is essential that fumigation should be carried out with care, and only when the poultrykeeper has a full knowledge of the correct procedure. While the Department does not recommend that fumigation should be carried out as a routine practice, full details will be supplied on request to any poultrykeeper who wishes to use this method of control for "B.W.D." Evidence collected in New Zealand does not support the view that serious trouble from the spread of this disease in cabinet incubators is being experienced. This is probably due to the mild form of infection at present existent in the Dominion.

Where Help Can Be Obtained

Poultrykeepers are urged not to accept undue losses among their young chickens without requesting help from the Department. Where losses are heavy during the first ten days of brooding, about four or six dead chicks should be forwarded immediately to—

The Chief Diagnostic Officer,
Animal Research Station,
Wallaceville.

A report upon the chicks will be supplied free of charge. Should this report state that the chicks died of "B.W.D.," then it is essential to consider "blood testing" all breeding stock involved. A request to "blood test" should then be made to the Superintendent of Poultry Husbandry, Department of Agriculture, P.O. Box 3004, Wellington, when particulars concerning a supply of antigen for "blood testing" will be forwarded without delay.

APIARY NOTES.—Continued from page 62.

The mead may now remain to mature, and if not quite clear it can be further refined the following winter. Mead improves with age.

Honey Vinegar

Honey vinegar is made and fermented in a similar manner to mead, but the proportions of honey and water are different. To each gallon of water 1¼ to 1½ lb. of honey are required, giving a specific gravity of 1.040 or about. Skim as for mead, and when fermentation has nearly ceased, transfer to casks. In the case of mead, the air is excluded, but in making vinegar a free circulation of air is needed to oxidise the liquid and help the formation of acetic acid. A 1-inch hole should be bored in each end of the cask on the upper edge, in a line with the bung-hole; these holes, and also the bung-hole, should be covered with cheese-cloth to exclude flies, but otherwise must be left open. The following winter it will be strong enough when properly made to be drawn off and put into whole casks to mature.

Honey vinegar has an excellent flavour and has a ready sale. It is recommended in most recipes to add about 10 per cent. of mature vinegar after the first or alcoholic fermentation has ceased, to force on the acetic acid production. While this saves time, the addition of matured vinegar is not needed to produce first-class honey vinegar.

If mead and vinegar are both made, care should be taken to use separate utensils for each, and to paint the hoops of the vinegar casks as a protection from the acid which attacks them. Absolute cleanliness in all vessels used in contact with the liquid is essential; otherwise, where contaminating bacteria are present, failure to produce a good article will result. Where no hydrometer is available, a fresh egg may be used for testing purposes. When the liquid for honey vinegar will just support a fresh egg, leaving a spot about the size of a sixpenny piece above the surface, it is about right.

—T. S. WINTER, Senior Apiary Instructor, Wellington.

Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the seven months, May-November, 1941, have been compiled by the Livestock Division:—

District	Cattle	Calves	Sheep	Of which Ewes were	Lambs	Swine
North Island.						
Meat-export Slaughterhouses—						
Auckland	91,973	556,832	55,586	21,078	193,292	153,159
Poverty Bay-Hawke's Bay	31,990	52,559	65,322	13,526	443,263	13,006
Taranaki-Manawatu	42,979	210,190	15,383	3,289	186,810	62,050
Wairarapa-Wellington	24,512	24,764	35,959	7,103	144,018	11,961
Totals	191,454	844,345	172,250	44,996	967,383	240,176
Abattoirs	71,328	24,131	305,102	153,798	33,265	69,998
North Island Totals	262,782	868,476	477,352	198,794	1,000,648	310,174
South Island.						
Meat-export Slaughterhouses—						
Nelson-Marlborough	699	11,039	11,220	5,942	70,906	4,881
Canterbury	6,404	36,345	171,559	132,379	443,317	17,002
Otago-Southland	3,998	42,090	140,501	130,034	469,335	3,811
Totals	11,301	89,474	323,280	268,355	983,558	25,694
Abattoirs	32,016	7,726	157,443	84,790	16,910	25,599
South Island Totals	43,317	97,200	480,723	353,145	1,000,468	51,293
Dominion.						
Meat-expt. Slaughterhouses	202,755	933,819	495,530	313,351	1,950,941	265,870
Abattoirs	103,344	31,857	462,545	238,588	50,175	95,597
Grand Totals	306,099	965,676	958,075	551,939	2,001,116	361,467
Same Period, 1940—Meat Export Slaughterhouses and Abattoirs	346,814	987,520	1,162,688	711,816	1,619,582	334,525
Same Period, 1939—Meat Export Slaughterhouses and Abattoirs	293,202	977,070	942,928	482,415	1,878,819	255,131

Slaughterings of Pigs

The 83,248 pigs slaughtered in meat-export slaughterhouses and abattoirs during November were distributed in weight ranges approximately as follows:—

Up to 60 lb.	325
61-110 lb.	18,921
111-120 lb.	8,261
121-160 lb.	44,536
161-180 lb.	4,879
Over 180 lb.	2,941
Sundries	3,385
	83,248

The grading of porkers is 89.5 per cent. of first quality and 10.5 per cent. of second quality, and the grading of baconers is 79 per cent. of prime 1's, 16 per cent. of prime 2's, and 5 per cent. of second quality.

In the different weight ranges of baconers the grading is as follows:—

111-120 lb.	86%, 10%, 4% of P1, P2 and 2nds respectively.
120-160 lb.	79%, 16%, 5% of P1, P2 and 2nds respectively.
161-180 lb.	68%, 23%, 9% of P1, P2 and 2nds respectively.

Federation of Young Farmers' Clubs

Poverty Bay Y.F.C. Shearing Competition

"HIGHLY satisfactory efforts" was the comment of Mr. W. J. Clark, who judged the Young Farmers' Clubs' fourth annual shearing competition at the Poverty Bay Agricultural and Pastoral Association's show at Gisborne on November 11 and 12. In spite of the large number of club members serving overseas, there were almost as many entries as in previous years.

The competitors were:—Messrs. B. Alley, M. Lange, G. Sainsbury, B. H. Smith and R. W. Smith, all of the Gisborne Club.

The conditions laid down by the Poverty Bay District Committee of Young Farmers' Clubs are as follows: Competitors must be financial members and have attended at least three meetings since the last show of a club in the Poverty Bay East Coast district, under 25 years of age, and not professional shearers or present or past members of the Shearers' Union. The entrance fee is 2/6, and each competitor is allowed to shear one trial sheep and two competition sheep. The competition is judged principally on cleanliness and neatness of work.

The Y.F.C. shearing contest at the Gisborne A. & P. Show. The winner, B. H. Smith, is at the left of the photo.

The number of seconds taken by the competitor to shear his competition sheep is divided by the points awarded by the judge for cleanliness and style, the competitor with the lowest final points being the winner.

The Poverty Bay and East Coast Sheepowners' Union has donated a Silver Challenge Cup for the winner of the Y.F.C. Shearing Competition. In addition, prize money was offered as follows:—First, £3/3/- (donated by G. V. Smith, patron of the Gisborne Club); second, £2/2/-; third, £1/1/- (donated by W. T. Veitch).

The results were as follows:—B. H. Smith, time 505 sec., points for cleanliness and neatness 15, 33.6 points, 1; G. Sainsbury, 853 sec., 17, 50 points, 2; M. Lange, 690 sec., 12, 57.5 points, 3.

The A. & P. Association also staged a shearing competition open to all shearers, the usual entry fee of 5/- being reduced to 2/6 for Y.F.C. members.

Roland Graham, Advisory President of the Gisborne Y.F.C., donated a special prize of £2/2/- for the Y.F.C. member securing the highest marks in this class. This prize was won by R. Duncan, and N. Cooper also competed in this class as a Y.F.C. member.

Auckland Council Debating Competition

By E. B. GLANVILLE, Hon. Secretary, Auckland Council.

FOR the purposes of the debating competition sponsored by the Auckland Council, the whole district was divided into three areas, namely, Northern (Kaitaia, Dargaville, Whangarei, Warkworth), Central (Auckland, Waikato, Northern King Country, Southern King Country, Thames), and Eastern (Western Bay of Plenty, Eastern Bay of Plenty, Rotorua). The Council acquired three cups, which were competed for among the clubs in each area, and were awarded as follows:—

Northern Area. — Matarau Club (Auckland district) beat Kakepuku kapa Club (Warkworth district) in the final, the subject being "That in New Zealand soil erosion is not a serious problem."

Central Area. — Franklin Club (Auckland district) beat Karepuku Club (Waikato district), the subject being "That farmers should be encouraged to travel."

Eastern Area.—Te Puke Club (Western Bay of Plenty district), the winning club in club competions, won the cup easily, no clubs from the other two districts within the area entering the competition.

The debating throughout the competition was of a high standard. The judges at each debate gave useful summaries and criticism, and from the experience gained this year the Council hopes that the competition next year will be carried out on a much larger scale.

Canterbury Inter-district Debating Contest

THE annual inter-district debating contest for the Canterbury Council area was held recently at Ashburton, and teams from the following clubs participated:—Waihaorunga (representing South Canterbury), Methven (Mid-Canterbury), and Darfield (Christchurch district); a team from the Cannington Club (South Canterbury) was also entered to make a four-sided contest. Mr. C. C. Werry, Chairman of the Mid-Canterbury District Commit-

tee, welcomed the visitors, and invited Mr. A. D. Talbot, Chairman of the Canterbury Y.F.C. Council, to preside.

The first debate, "That the New Zealand Farmers Fail to Make Sufficient Use of Science in their Agricultural Operations," was contested by the Darfield and Cannington teams. Leading for Darfield (affirmative), K. H. Jarman referred to the unwillingness of the farming community to learn the principles of science as applied to agriculture. The fact that there were only two agricultural colleges in a country dependent on the industry showed to what a limited extent scientific methods were being used. The second speaker, J. W. Stewart, stressed the reluctance of the farmers to take advantage of the work of experimental farms, and C. Butler, the third speaker, described the policy of wheat-growers in New Zealand over the past 20 to 30 years as being selfish and unscientific. The leader of the Cannington team, R. McKenzie, maintained that scientific knowledge was being applied in every branch of farming. Agriculture was taught in secondary schools throughout the Dominion. Improved methods of growing lucerne, the use of certified seeds, the successful combating of diseases, and the practice of topdressing were instanced by J. E. Watson, and G. H. Squire spoke of the part that disease was playing in the livestock section of farming.

The subject of the second debate, between the Waihaorunga and Methven teams, was "That New Zealand's Future Depends on the Extensive Development of the Secondary Industries." The Methven team, which took the affirmative, was led by R. Penny, who contended that while isolation had stood New Zealand in good stead in the past, if ambition were lost and industries were not developed, the Dominion would be crushed out of existence by more progressive neighbours. R. Wightman referred to the wide scope for secondary industries, and the third speaker, A. McKay, urged that New Zealand was too dependent on agriculture; he considered it unwise "to have all the eggs in one basket." J. Barclay, leading for Waihaorunga, stated that in the great industrial countries poverty was proportionately more rife than was the case in New Zealand. He asked where a market could be found for the production from a large increase in secondary industry. The second speaker for the negative, I. Hurst, maintained that New Zealand had to import articles to balance the primary exports; the development of secondary industries would necessitate a high tariff barrier against imports, which would be detrimental to the farmer, who depends on exports. The third speaker contended that secondary industries could not be greatly developed without disorganising other sides of life in the Dominion.

The judge, Mr. E. J. Wood, commented on the high standard of debate, and gave his decision as follows:—Mid-Canterbury (represented by Methven), 247 points, 1; South Canterbury (Waihaorunga), 246 points, 2; Christchurch (Darfield), 213 points, 3. The teams, officials and members and friends present were entertained at supper at the Technical High School.

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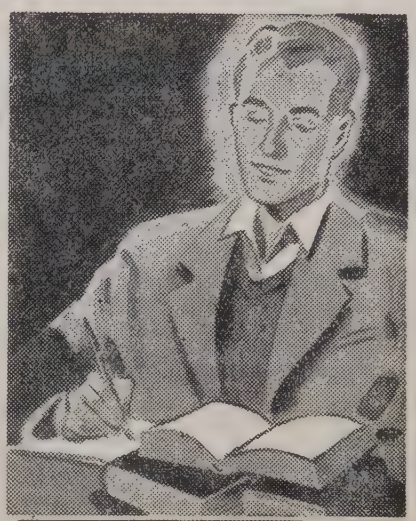

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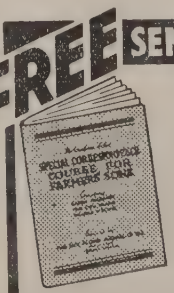

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..... **J.A.**

Final of Bay of Plenty Debating Contest

By W. P. NICHOL, Chairman, Te Puke Young Farmers' Club.

THE final of the Bay of Plenty debating shield was held recently in the Paengaroa Hall, and was contested by teams representing Waimana (Eastern Bay of Plenty) and Te Puke (Western Bay of Plenty). The debate was attended by a large and enthusiastic audience.

Mr. A. Walter, chairman of the Western Bay of Plenty District Committee, presided, and opened the proceedings by introducing the teams, which were as follows:—Waimana (affirmative), J. Cranswick (leader), R. White and J. Burnett; Te Puke (negative), P. Nichol (leader), L. Ashe, and D. Caldwell. Mr. F. Cook, headmaster of the Te Puke District High School, acted as adjudicator, and Mr. A. Gordon, Te Puke, as timekeeper. The subject of the debate was, "That Good Feeding is of More Importance in Increasing Dairy Production than in the Improvement of Livestock."

After a lively debate, in which members of both teams took advantage of the numerous arguments in support of their respective sides, the Te Puke team was announced the winner by 59 points. The adjudicator, Mr. Cook, summed up the debate, and gave the speakers some very helpful advice and criticism. The debating shield was presented to the winning team by Mr. D. S. Ross, Dominion president of the New Zealand Federation of Young Farmers' Clubs, after which a dainty supper was served and the floor cleared for dancing.

Eradication of Hydatid Disease

MR. W. ALEXANDER (a member of the Auckland Y.F.C. Council), whose son has recently completed his fifth-year medical course at Dunedin, supplies the following interesting information:—"During the presentation of the fifth-year theses, one or two of the medical students dealt with the subject 'Hydatids' and stated that the trouble was difficult to control, particularly where the farmers concerned were elderly men belonging to the 'old school.'

"It appears a difficult matter to impress upon the farmers concerned the dangers following their careless handling of the offal from farm-killed sheep. The students went on to state that the best hope lay in the members of the Young Farmers' Clubs organisation in New Zealand, pointing out that on farms where the sons or employees were members of the Young Farmers' Club in their district, they had a far better appreciation of the importance of eradicating this disease."

Club Membership Subscriptions

THE attention of Club Secretaries is directed to the fact that cyclostyled forms for notifying members of subscriptions due are now available at headquarters. Secretaries wishing to be supplied with these should communicate with the Organising Secretary, Young Farmers' Clubs, P.O. Box 3004, Wellington, stating the number required.

Among the Clubs: Reports on Activities

SOUTH OTAGO.

Clutha Valley.—Address by J. G. Richards, Department of Agriculture, on "Farming in the Waikato."

CENTRAL OTAGO.

Upper Clutha.—Exhibition of films. Talk by Mr. Brook-Taylor on "Liver Fluke in Stock."

NORTH OTAGO.

Enfield.—Talk by Mr. O. Loe on "The Care of Mares and Foals."

SOUTH CANTERBURY.

Geraldine.—Competitors' cards from stock judging competition at Winchester received from District Secretary and given out to members concerned. Arrangements for combined annual picnic with the Farmers' Union and W.D.F.U. A motion of sympathy with the Temple Bros. in their recent bereavement was passed. Talk by Mr. P. H. Davis on "General Plumbing and Drainlaying." Mr. Davis also gave a practical demonstration on the use of a soldering iron.

MID-CANTERBURY.

Hinds.—Impromptu speech competition for a challenge cup presented by Mr. B. J. Simmons. The judge, the Rev. Father Daly, Ashburton, awarded D. Chisnall and R. Watson first equal. At the previous meeting stewards were appointed for the Ashburton A. & P. Show. Lecture by Mr. C. C. Werry, Technical College, Ashburton, on "Preparing the Wool Clip."

CHRISTCHURCH.

Ellesmere.—Prepared papers by members on "Farm Mechanisation" read and discussed.

NORTH CANTERBURY.

Amuri.—Talks by Messrs. A. H. Baker and R. A. Grant on "A Recent Visit to Lincoln College" and "Education" respectively.

Scargill-Omihi.—Combined meeting with the W.D.F.U.; demonstration by Mrs. Chapman, who showed the spinning of wool from the fleece into yarn suitable for knitting.

WAIRARAPA.

Masterton.—Discussion on Roll of Honour. Report by Mr. W. F. McLaren of the recent Dominion Executive meeting in Christchurch. "Short talks" competition for the Falloon Cup; Mr. G. H. Perry acted as judge, and gave his decision as follows:—P. McLachlan ("Organic Matter in the Soil"), 1; S. Booth ("Mole Drainage"), 2; C. A. Mackay ("Fat Lamb Competitions"), 3; W. D. Buick ("Early History of the Southdown Sheep"), 4.

HOROWHENUA.

Levin.—Talk by Mr. S. Freeman, Dominion Secretary, on Y.F.C. affairs. Members of the Junior Branch, W.D.F.U., joined the meeting to see sound films of general interest exhibited. The chairman, V. C. Lewis, made presentations on behalf of the club to G. Gimblett, J. Gibson, and D. Hair, three of the club members on final leave. At the previous meeting a team was selected to contest the Thomson Debating Shield with Johnsonville Y.F.C. Lantern lecture by Mr. E. P. Neilson, Advisory Officer N.Z. Dairy Board, on "Herd Improvement."

MANAWATU.

Apiti.—Business meeting. Discussion on the National Savings scheme.

Kairanga.—Four teams selected to compete in stock judging competitions at Feilding. Lecture by Mr. Hill Motion on "Sterility"; the speaker illustrated his talk with "movie" films. At previously unreported meetings Mr. H. A. Bayley gave an address on "Stock Diseases," and Dr. Yeates, Massey College, spoke on "Farm Shelter."

Oroua Downs.—Business meeting. Arrangements for transport of members to the Feilding Y.F.C. Show.

Rongotea.—National Savings scheme—19 members subscribed. Parents' and friends' evening, being the sixth anniversary of the club. Certificates presented to six members who had been successful in the stock judging competition at Feilding. A talk was given by Mr. C. C. Taylor, Palmerston North, on his experiences and general impressions of Sweden and Russia.

Whakarongo.—Films exhibited by Mr. G. Dawick on "Jerseys in New Zealand." At the previous meeting Mr. E. Bruce Levy gave a lecture on "Soil Conservation."

WANGANUI.

Bulls.—Balance-sheet of recent dance, showing credit of £9 14s. Discussion on district debating contest; F. Thorby congratulated both the senior and junior teams on their debating,

making special reference to the high standard attained by W. Bowen, leader of the junior team. C. B. Anderson reported on the Y.F.C. Show at Feilding; eight of the club's members had exhibited stock, five of them gaining a total of 14 awards. Three members took part in the stock judging competition, of which the results were not yet to hand. The secretary, S. G. Avery, reported on both the District and the Wellingotn Council meetings. One new member elected.

SOUTHERN HAWKE'S BAY.

Ballance.—Two new members elected. The chairman congratulated members of the club's debating team who had won the final of the District Debating Contest against the Woodville team. Talk by Mr. W. T. Brown, Pahiatua, on "Bloat in Dairy Cows."

CENTRAL HAWKE'S BAY.

Onga Onga.—Films of general interest exhibited by Mr. Greer, Hastings.

POVERTY BAY.

Gisborne.—Report on recent dance, showing credit of £9 0s. 2d. Messrs. D. S. Ross (Dominion Y.F.C. President) and W. G. Brownlie (Chairman, Wellington Council) addressed the meeting on Y.F.C. affairs and activities.

TE KUITI.

Paewhenua.—Arrangements for lecture, etc. Three new members enrolled. Lantern lecture by Mr. K. M. Montgomery, Department of Agriculture, on "Cultivation."

EASTERN BAY OF PLENTY.

Edgecumbe.—Talk on Y.F.C. affairs by Mr. S. Freeman, Dominion Secretary. The possible revival of the Taneatua Club was discussed with Taneatua members. Mr. Freeman exhibited sound films of general interest.

Waimana.—Roll of Honour to be compiled. An interesting letter read from a club member overseas. Arrangements for club dance. Talk on Y.F.C. affairs by Mr. S. Freeman, Dominion Secretary, who also exhibited sound films.

WESTERN BAY OF PLENTY.

Te Puke.—Two new members enrolled. Remit to be forwarded to District Meeting, "That before any club goes into recess formal application must be made to the District Committee concerned." Address on "The Value of an A. & P. Association" was given by Mr. K. A. Bennett, President of the Te Puke A. & P. Association.

Te Puna.—Results of pasture competition announced:—Champion Field: A. Gibson, 1; D. Foster, 2. Most improved paddock: F. Roberts, 1; K. I'Anson, 2. Lantern lecture by Mr. A. V. Allo, Department of Agriculture, on "Feed Taints and How to Eradicate Them."

WAIKATO.

Kakepuku.—Address by Mr. R. Armstrong on "Farm Accountancy"; the speaker made use of forms, etc., to illustrate his talk.

Te Awamutu.—Address by Mr. J. S. Pattison on "Jersey Breeding."

AUCKLAND.

Harrisville.—Arrangements for a field day. Address by Mr. D. Smith on "Early Settlement in the District."

Hunua.—Final arrangements for "Side-show" and calf judging on Calf Club Day. Film exhibited by Mr. Saunders, depicting the manufacture of superphosphate. At the previous meeting, which was specially arranged, members of the Clevedon Y.F.C. and the Hunua Farmers' Union were present. A lantern lecture was given by Mr. E. H. Arnold, Department of Agriculture, on "The Distribution of Liquid Manure."

Mauku.—Discussion on the collection of ergot. Illustrated talk by Mr. J. M. Smith, Department of Agriculture, on "A Trip Through the Chatham Islands."

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Health Notes for the Farm

Leave Rhubarb Alone If It Doesn't Like You

Contributed by the
DEPARTMENT OF HEALTH

A CORRESPONDENT has written in expressing concern about the effect that the eating of rhubarb has on certain members of the family. They all like rhubarb, but rhubarb doesn't seem to like them, and, after eating it, they experience distressing symptoms akin to mild poisoning. It is, in fact, a form of mild poisoning. Cases of it are quite frequent during the rhubarb season, and people who are sensitive—or, to put it a little more technically, people who are allergic to rhubarb—can do only one thing about it. That is, leave it alone.

Rhubarb is mentioned particularly, because this is the plant with which the inquiry is concerned, and because rhubarb is highly popular as a foodstuff among the great majority of people, who can take it without any harm. It combines nutritive value with certain worthwhile medicinal properties, and those who like it are well advised to keep on eating it. It makes an excellent dessert, and it is good for you.

As a matter of fact, the medicinal value of rhubarb has been known for centuries. Away back in the sixth century it was used as an aperient. A little later we hear about the rhubarb and tamarind pill—a mediaeval potion that had a recognised value in those days. And in the time of Queen Elizabeth rhubarb leaves were used as a potherb, and were considered superior to spinach or beet.

Medicinal Value

Today, rhubarb plays a highly important part in the medicinal sense. From the rhubarb plant our chemists prepare powders, fluid extracts, tinctures, and pills. They are all used in modern medicines as purgatives. And they act very well with most people. Other people, of course, become upset. They get that headachy and sick feeling, and sometimes come out in a skin rash. In that case, the only remedy for those people is to leave rhubarb in all its forms severely alone. It is difficult for those who fancy it, but where the palate says "yes" and the tummy says "no," it is a case where the "noes" have it! The itchy wheal type of rash, which is usually symptomatic of rhubarb poisoning, is best treated with a simple lotion, such as calamine lotion, applied to the affected areas.

And here is a tip about cooking rhubarb. Most people use the stalks as a cooked fruit. Some also cook the leaves as a vegetable. It is probably wiser not to do this. Rhubarb leaves contain a good deal of oxalic acid, and a few cases of oxalic acid poisoning have been recorded through eating the leaves. The stalks are perfectly safe—to those without rhubarb allergy, of course!

Other Foods Implicated

Rhubarb is only one of many kinds of foodstuffs that can, in sensitive people, cause skin rashes or digestive upsets, with abdominal pain and vomiting and diarrhoea. Mushrooms, strawberries, raspberries, tomatoes, and brazil nuts are more commonly implicated. And, in certain highly sensitive people, even everyday foods such as oatmeal, egg, shellfish, and pork may bring out a skin rash.

The common type of rash associated with these foods is known as urticaria. It begins as whitish. flattened lumps or wheals, with surrounding redness and marked itchiness. They have a habit of appearing in one place, lasting a few hours, and then disappearing, to come up somewhere else. Occasionally—chiefly in children—the food rash may resemble the scarlet fever rash—that is, a pinpoint redness covering some part of the body, frequently the buttocks. Again, it might appear as an eczema.

The skin trouble will disappear as soon as the poison has been eliminated from the system, and, in the meantime, the application of the calamine lotion will relieve the itch. The only satisfactory way to track down the cause of the upset is to cut out the food that causes it. This can be done in two ways—by your doctor, with a skin test; or by yourself, by a series of elimination tests with the foods you suspect.

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INQUIRY ANSWERED.

A.J. (Morrinsville).—Yes; ringworm is an animal disease, but the cause is a fungus, not a germ. It is highly infectious, but not dangerous. Tincture of iodine applied twice a day will control and cure body ringworm. Whitfield's ointment is recommended for scalp ringworm. Chemists have it.

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THE Good Neighbour

BY MARY

From Me To You

ONCE upon a time, when we were young, we read in our story books that when the prince found his princess, they were married, and lived happily ever after.

But now, now that we have grown up, we would write our fairy tales thus: "And the prince and the princess lived happily until they were married, and for a little while after —but not forever."

I don't think there are many marriages that have the true fairy tale ending. Now and again we come across some dear couple who have weathered all of Life's storms together over a long period and are still sweethearts. But such folk are rare.

Marriage is difficult. For a woman it spells sacrifice, for love is a hard and an exacting taskmaster. Love is a strange thing, not always open to cold reason. On the right plane it does beautify life, but so often circumstances are such that it becomes very difficult, especially for a woman, to keep alive the high torch of faith in her loved one. Love makes demands that test the strongest fibres of our being—if we are worthwhile, and our love is true, we will stand the test. But it takes courage, and perseverance, and great faith often.

True love does not always find its reward in marriage. There is many a woman to-day, carrying on with her daily round, outwardly happy and contented, who hides within her soul a deep and lasting passion for the man she loves—a man who is not for her. And these women are perhaps as noble as any alive, for they are making of the "not-giving" the greatest gift of all. Their steadfast faith in their man helps him on, and helps her, too, although every day brings to them fresh anguish, and sometimes utter hopelessness in the worth of living. Such secrets are their own burden —outwardly they are carried lightly.

As I said before, love is a hard taskmaster. "Touch not, taste not, handle not" is no text for lovers. Love brings pain and torment, love dispels peace of mind forever, but who wants plain peace, anyway? Keep treading your heights of happiness—they more than repay for the valleys of gloom. Always remember that "One crowded hour of glorious life is worth an age without a name."

To-day, to many of you, love comes in an airmail envelope from overseas. It is difficult to dispel from your heart those doubts and fears that haunt you, wives and sweethearts of the men overseas, but keep your faith burning, keep yourself busy, and when your dear one returns, make very sure that your story is one that is going to end "And they lived happily ever after." It depends on YOU—not on your man. He will alter with the years —you must alter, too, to keep pace with him. Difficult, admittedly, but it rests with you.

Mary

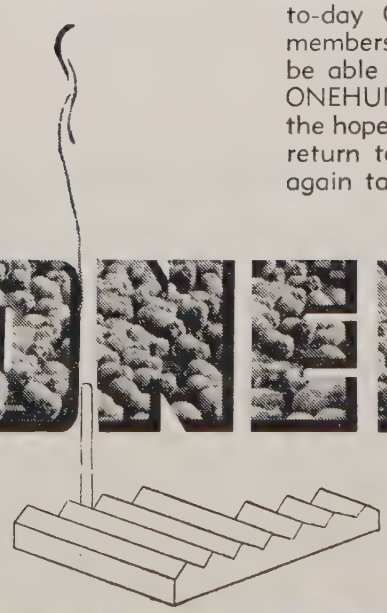
Mary's "At Home"

I HAVE enjoyed your pages so much. I think it is good for those who live well back to be able to meet per medium of your pages when they are to a large extent deprived of the advantages of those who can meet other women often and spend a sociable half-hour together. Now that we can get no petrol, we will have to stop home more, but why should we worry when we can exchange happy thoughts and experiences at your "At Home"? —**Mother-of-Three, Oamaru.**

I HAVE just finished spring-cleaning. Isn't there a pride of ownership in a spick-and-span house? The sun shines brightly, and everything within doors seems to reflect its brightness. However, I had better enjoy its spick-and-spanness while it lasts, for if the small boy has anything to say in the matter, the place will soon be back to its usual homeliness. Toys, blocks, and books everywhere. After all, who would wish it otherwise? Too soon life's trials will await my baby boy, and it is almost a prayer that life will be kind to him.

I have been making toys for the local patriotic bazaar. Grey elephants, with blue and pink ears, and tiny moon babies with big ears perched precariously on top. Double-headed dolls, one black and one white. The pick was a negress, in red print frock, complete

Down the flare-path and into the hangar . . . then to rest and relax under the comfort of ONEHUNGA Blankets—for to-day ONEHUNGA Blankets are on active service with members of all the fighting forces. That is why you may not be able to buy your full requirements at the moment. The ONEHUNGA Mills are weaving for war—but they join you in the hope that the world will soon come "out of the night" and return to the peaceful days when "ONEHUNGA" will once again take its place as a truly "household" word.



ONEHUNGA Blankets

ONEHUNGA TRAVEL RUGS ★ AIR CELL BLANKETS ★ ONEHUNGA WOOLLENS

with dust cap and white apron, and a huge grin.—**J.F., Otara.**

SINCE writing to you last, I have been a cripple, not being able to use my right hand—some form of rheumatism. I really think everyone should be encouraged to use both hands from early childhood, so that in the event of one being put out of action we should not be quite so clumsy. I should love you to pay a visit to my garden just now—sweet williams on one side, carnations on the other, at the front sweet peas, and stocks round the back. A well-perfumed walk we have all round our house.—**Mary Ann, Bell Block.**

I THINK Huia has put her finger on a very sore spot with most people when she speaks of gift-giving. There is something pathetic about all gifts given in return for some service. In most cases the service would have

My Little Bamboo Hut

Beneath the giant cedars,
Is my little bamboo hut,
Where the gates of Heaven are open,
And the gates of earth are shut.
Nature unrolls her pictures,
Her pageant of earth and sky,
Morning and noon and evening,
And moon and stars pass by.
There are visions there, and voices
Within the bamboo hut,
When the gates of Heaven open,
And the gates of earth are shut.

—Writer Unknown, 1100 A.D.

been given gladly, as no person is worth much who wants material returns for service. Those people who go without that they may give an expensive gift are only making matters worse, as usually the recipient knows they have gone without, or else it causes frightful embarrassment. The better way, as Huia says, would be to say it with flowers, some small home-made gift, or even produce, and in due time one finds a chance to do some small service. There are so many ways to return a good deed without even spending one penny. We just need to think of others a bit more than we do.—**Willow, Henderson.**

WHAT a lovely, friendly corner your "At Home" has grown to be. I do enjoy reading your letters, and I was particularly interested in this month's "From Me to You." It's strange, really, but we must have been thinking about the word hope at about the same time. I was looking up a list of names suitable for baby girls born during wartime, when my eyes rested and stayed with hope. What a world of meaning is expressed in that one small word. The more often I repeated it softly to myself, the more wonderful and inspiring it sounded. Yes, the wee one now has the name of Hope.—**Bell, Hokianga.**

AT present we are tucked away from the "main stream" looking after a farm (in the making) for a brother who is serving with the Forces. We have no near neighbours on this road, which, being a blind by-road, does not hold any regular traffic. But we are high up, if three miles from the main highway, and look out on a very beautiful and extensive view of sea, hills and, in the low foreground, prosperous looking farm lands. Everyone coming here envies us our view. I am a busy person, having to help my husband in various farm jobs, my own housework to do, and the two children's school work to supervise for the correspondence school.

In between knitting for the Red Cross and all the other things to do on a long day I still try to keep up my reading (being an enthusiastic bookworm with a desire to learn something about everything I can). We have a good radio, which is such a comfort, as I don't get into the township more often than once or twice a month. I have my music, my talks of all sorts, commentaries, and the war news. I feel I can face anything if I know what is ahead, while I am one of those who find, if I can follow our boys overseas in thought as well as on the war fronts as they progress (or retire) things soon set more in the right perspective.

We've had some dreadfully stormy weather this year, but when my garden is gay with a riot of colour and scents, as it is at present, and the sun shines over a blue sparkling sea, I think how thankful we ought to be in these tragic days, for quiet peace and safety, for food, shelter, and adequate warm clothing.—**Tiggety Boo, Kati, Kati.**

I HAVE been so busy, and will be until our busy season is over. Christmas has come around so quickly, and I wonder how many folk realise the importance of Christmas letters—to some people they are the most cherished remembrances that the festive season brings. A whole year may have elapsed since letters have been written to one's different friends. But it is so worth-while to sit down and write a long, newsy letter, for you do not realise what happiness it brings to the receiver. Such letters can colour a whole day, and after one has read it you go back to the day's activities stimulated by the pleasant memories of companionship.—**Peggy, Pleasant Point.**

ISN'T the war news terrible these days? "Peace on earth, good will to men," seems as far away as ever, but we know that right must and will prevail. So we must just have faith, and do all we can to assist in the combat. A friend of mine wrote recently to me: "It seems to me that the world is like a giant chessboard, on which the power of the world makes his moves in continued defiance against God through His rebellious children."

How dreadful it would be, and is for those whose eyes are still blind, if this were all of the picture. But no, God Who made the world is still in charge of it, and He is guiding its destiny, till all His purposes be fulfilled. Clouds always hide the sun.—**Jewel, Hastings.**

I THINK in these days we should all have patience, for with patience everything will turn out for the best.

Evelyn Keyes, Columbia star, has acquired two new pets! How do you like them?

I had a little bantam hen sititng on half a dozen eggs; she is the exact illustration of my feelings. There she was, broad and motherly, in her box of hay, so quiet, so still, waiting and biding her time. And always there was that bright, sharp eye of hers, whenever one came to see her, so she couldn't have been dozing stupidly most of the time. I used to sit near her box with my sewing—I do love a brooding hen—they are good company. So quiet, so patient, so unhurried. And I said to myself, "Patience," when thoughts began to torment me, and looked again at my mother hen.—**Heidi, Kati Kati.**

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TO-DAY

Recipe for a Garden

By ANNE EARNCLIFF BROWN.

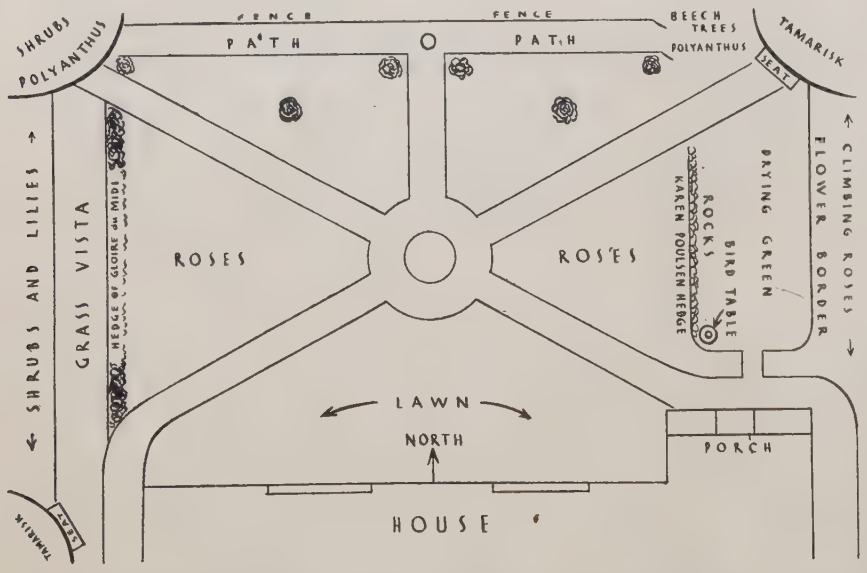
NO doubt, many of our readers are familiar with the work of that delightful New Zealand writer, Anne Earncliff Brown. You will remember she wrote "The Farmer's Wife"—and how we all enjoyed it! So that you will be pleased to learn that she is one of our "Good Neighbours," and here is an article she has written specially for our enjoyment.—Mary.

MANY months ago I admired the layout of a not very large suburban garden, adding, "Somehow, though I can see your charming garden, I can't put on paper the 'how' and 'why' of its satisfying unity."

Yesterday came the answer to my remark. I give it to you just as the garden-maker has written it. If you should care to try it out, I know you will be well pleased with the result.

"Take one croquet lawn, and divide into equal parts." This perhaps sounds rather a vague recipe, but that was the foundation for the layout of our new garden. From a disused chimney were bricks a-plenty, and with bricks are possibilities of paths. Let there be a large, old weeping tamarisk in the east corner, just right for a seat under its shade. The next idea—get a balance from the house, which has a flat front. The lawn was marked off at a triangle from the house, which gave the idea of the radiation from the centre of the lawn, so a path was planned to lead from the corner of the house right across the lawn to the seat under the tamarisk.

The next step was to set to work with string and long laths of wood, and measure out the flower beds. From the front gate to the back fence was a long, narrow vista of lawn—this was left untouched, and with an eye to future planning. The brick path disappears round the corner of the house to intrigue one enough to follow it, and find it leads to the tamarisk seat. This path is slightly curved in its progress.



After much measuring off and keeping a straight eye on the balance of the triangular lawn, I managed to work it so that four flower beds were evolved of triangular shape, the apex of each triangle pointing in to a circle in the centre of the lawn. The centre, as a feature, is to have a tiny pond, a sundial, or whatever fits in without spoiling the long line from the corner of the house to the seat.

The flower beds were trenched following the lines being pegged out. I had great difficulty getting the digger to eschew straight lines. The strips of turf remaining defined the paths, and after the beds were clearly seen, these turfs were stripped off at a good depth, and the paths bared, ready for the bricks. Many experiments evolved a pattern which used the least number of bricks, and yet looked effective. One became quite expert in flattening the earth, laying the bricks, and, hardest task of all, making those bricks curve to round the corners. By using half bricks, and picking out any with a natural slight bend, this was successfully achieved. The placing of the bricks in the centre piece certainly called for much patience, but eventually a neat circle of bricks took form towards the radiating centre. So that the flower beds nearest the fence would not be too hard to approach, a narrow path was made parallel with the fence.

Now the planting begins. On either side of this path are polyanthus, and from the seat under the tamarisk the eye beholds a vista of spring beauty. Close by the tamarisk are two beech trees of slender growth, and under these are more polyanthus, with a haze of blue, deep blue, forget-me-nots, to give the necessary illusion of misty distance. The flower beds nearest the house are planted with roses, leaving plenty of space for side plantings of annuals, the most successful of these being pink stock and pink godetias, with here and there the deep blue of the new Jubilee gem cornflour. At the end of the centre path which leads from the circle of bricks in a direct line with the centre point of the house is placed an ornament—we had a quaint, old-fashioned urn, at least 50 years old. Flanking this path are bunches of primula juliana (a red version of "Wanda"), then pink stock in season, to be followed by red and gold chrysanthemums.

To give balance, dwarf retinosperas are planted at each corner of this path, nearest to the brick centre. At the far end, on either side of the urn, dodoneas are planted to give height,

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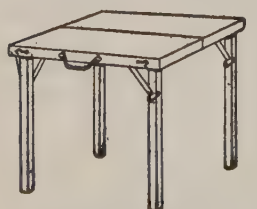

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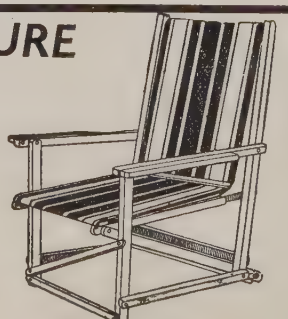

"Mission" Chair.

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and also colour in the winter. To take away from the flatness in the centre of the two beds nearest the fence, standard apples are planted. Unfortunately, the birds clean up the apples before their full beauty can be enjoyed.

I think a small plan will give an idea of what I have tried to explain. I must say that the seat under the tamarisk on the east side was a stimulus to plan, as it gave the necessary focal point. On the west, just opposite the corner of the house, is another old tamarisk, so a space has been cleared here, and a temporary seat placed beneath it. This gives a lead to the eye down the path to the other tamarisk, taking in the rose beds on the way. The garden is so planned that there is always some colour throughout the year. July may be a difficult month, but polyanthus and early jonquils will brighten it up.

It may sound a lot of hard work, but garden lovers are not afraid of work, and the reward is rich. It will be some years before you can enjoy the full fruit of your labours, but watching your garden grow will be a never-ending source of delight to you and yours.

What About A "Wet Day Box"?

SCHOOL holidays—what fun think the children as they toss their books into their bags, and say goodbye to the schoolhouse for six weeks. Six weeks of glorious freedom—six weeks that seem like a stretch of eternity, when small toes can squirm in deep pools instead of being squeezed into sandals that tap impatiently on the schoolroom floor.

But what do you think, Mother? For you, the six weeks may also seem like a stretch of eternity, but not quite the same glorious stretch that it seems to the children. Six weeks can bring with it a lot of wet days—days in which the kiddies are inclined to quarrel, and you find it hard to keep from wanting to walk out and leave them.

What about having a Wet Day Box? We always had one when we were kiddies—it was an old cabin trunk, and inside it were all sorts of surprises. The joy with which we heralded a wet day! Drag out that old trunk from the back room, and give it a bit of attention. The children will enjoy helping. Ours was a pirate's treasure trunk, decorated lavishly with skulls and cross bones in white paint—ugly leering faces too. Inside it was packed with old clothes that are ideal for dressing up. Anything will do—old scarves, coats, hats. dressing gowns,

The grand essentials of happiness are something to do, something to love, and something to hope for.
—Patrick Chalmers.

anything. There is nothing to equal the thrill of dressing up on a wet day. Let the kiddies help to fill the box—Indian suits are easily made out of old sacks, feathers can be dyed with coloured inks. Such fun!

Scrapbooks, too, are a wet-day godsend. Save all your old magazines, catalogues, anything that has pictures in it. Labels off tinned fruits or jams are attractive. Have one day for cutting out, and let the kiddies clean up their pieces after they have finished with them. Perhaps newspaper pictures can be painted, or coloured with crayons. And pasting of course is always the greatest fun, although you will need to see that the children have a paste brush each, and a large apron to keep them clean.

When it's a wet day in summer—Virginia Weidler, of Metro-Goldwyn-Mayer studios, likes nothing better than sitting on the floor, cutting out pictures for her scrapbook.

It is a good idea to collect up games, such as ludo and snakes and ladders, and keep them in the Wet Day Box. Every now and then, put a surprise parcel in the box, so that when the weather breaks, you are not caught unawares.

But the essential secret of the success of the Wet Day Box is that it **must** only be played with when the weather is really too wet to allow the youngsters to play outside. If the cabin trunk has a lock, well and good, but if not, make up some magic formula, such as "Abracadabra," and only allow the box to be opened after much ceremony.

Wet days are trying, but do be prepared for them, and you will find that so long as the kiddies are amused and interested in what they are doing, they will be too busy to fight with each other, and quarrel or cry.

Here's to the success of the Wet Day Box these holidays!

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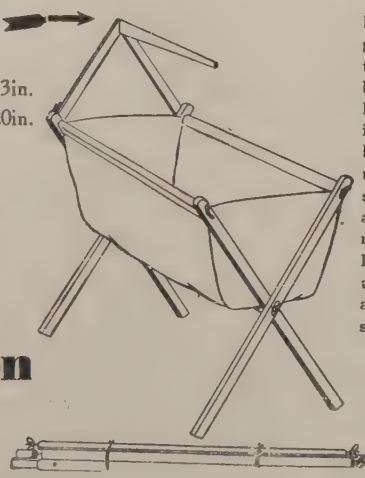

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Our Competition

What Is The Most Inspiring Word Today?

I THOUGHT I set you a puzzle when I set this competition, but I found instead that I had set myself one. For so many inspiring words came tumbling out of my mailbag that I found it difficult myself to make up my mind. However, I think you will agree with me that "Khorasbad," Marlborough, deserves first prize, while "Kowhai," Mangatainoka, is a close second. Highly commended we have "Vem," Frankton Junction, and "M," Feilding.

First Prize

I THINK I can call myself a real New Zealander, as my family on both sides has been in New Zealand a hundred years, and to me there is no finer country to live in . . . yet the word that holds the greatest inspiration for me today is "England." It stands for so much, for honour, truth, and justice in dealing with other nations, for cold enduring courage in the face of the most brutal and prolonged attack ever launched on a civilian population, for calmness and restraint in dark hours (what other nation has a page to show as perilous as those unarmed months after Dunkirk?) and for fortitude the bulldog spirit that never lets go, even if all seems lost. All these things the word "England" means to me.

Whenever I hear the name spoken, I think of a brief short from a recent newsreel. Night was falling over London's suburbs, and the screen was almost in darkness. Then a match flared. A steel-helmeted, oil-skinned A.R.P. man stood motionless, staring upwards, and in his eyes, and the tense muscles of his jaw was symbolised "England." England waiting . . . weary but alert for the coming ordeal. It moved me far more than pages that have been written about England.

Think of the word "England" whispered in a dozen languages throughout the length and breadth of oppressed and starving Europe, a symbol of hope to those who lie crushed under the Nazi jack-boot. No longer can these people help themselves, but not a thousand Gestapo agents can stop their hearts' springing with hope for tomorrow "when England wins. . . ."

So it is not only to me, but to many million others, that the word "England" is an inspiration.—**Khorasbad, Marlborough.**

Second Prize

MY word is "Courage." Courage is that sublimest of qualities which makes us go on faithfully giving our service, doing our part when hope lies shattered. Rudyard Kipling sums it up in these words:

"If you can force your heart and nerve and sinew,
To serve your turn long after they are gone,
And so hold on, when there is nothing in you
Except the will which says to them 'Hold on'."

How gloriously that courage shines forth today. We bare our heads before it. Yesterday I visited an old couple. Their child, for whom they have sacrified and planned, has suddenly gone to an early grave. Not bitterly, not merely acquiescent, but quietly, steadily, they have taken up the threads of life again, and are building anew, their one object being to give help and sunshine to others. Homes today are shattered, human ties are broken, but the homeless stand four-square ready to build again. There are shattered wrecks of human life, some blind, who are cheerful and brave, uncomplaining of pain, weariness, and monotony.

Courage that never recognises defeat is the supreme British virtue. Not only is there the glorious white hot courage that leaps forth to meet the sudden emergency, the deadly peril, but there is the less spectacular, perhaps more difficult courage that bears the little things, the everlasting jar and fret and friction, that hides a broken heart, a frustrated life, that knows how to "walk and not be weary."

Whence is the source of this courage? I think it belongs to most of those who are self-seekers, who look on life as a journey to an heavenly country, who know death but as a brief parting. These people have the one sure sign of vitality, the power to begin life again, and we translate this power by the word courage. Looking deeper, we find that courage has its roots in love, the love that shuts out all thoughts of self, and not only brings us nearer to God, but is God.—**Kowhai, Mangatainoka.**

Highly Commended

THE most inspiring word in my dictionary is "Love." What a wealth of meaning lies in that little word, what a sweet sound it has, and what a great part it has played through life. God so loved the world that He gave His only son to die for it, and isn't it through the Love of our Saviour that we have the hope of Heaven? And so it has gone on right down the ages. Great sacrifices have been made for love, and it has been the inspiration of some of our greatest poets, composers, and inventors. Today we find the flower of our manhood giving their all on the battlefield because of their love of freedom, our country, and the Empire, and

A Bedside Book

IT won't be many weeks now before the best days of summer are over, and with the coming of autumn our thoughts turn to our favourite recreation—reading. Let us share your book friends. Whether they are old or new, do write and tell me.

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it is the love of their dear ones at home that will inspire and strengthen them in the grim struggle. Turn your thoughts to London, and those gallant people there, proud to stand and defend to the last the city they love so well. And so it is for love, love of right, love of freedom, and love of our Empire that we all stand shoulder to shoulder with our allies today to fight the hatred of Nazism, and Victory must be ours, for God is Love.—**Vem, Frankton Junction.**

YOU ask for one inspiring word, one word which can help and inspire us in these days of difficulty and sorrow. I have found such a word, and looking it up in my dictionary, I find its definition is "to overcome, to surmount." Is not that what we are trying to do every day, to overcome or surmount our difficulties? To me

Most of the shadows in this life are caused by standing in our own sunshine.—Emerson.

this word "transcend" has a beautiful sound as well as such a fine meaning. Some may say faith, hope, love, courage—these are the words which inspire us today—but I think this one word "transcend" embraces them all, for without faith, hope, love, and courage we cannot transcend our difficulties. So let us all during the New Year try to rise above all our problems, and in so doing set the example to those around us that they too may learn the meaning of the word transcend.

"Keep a little song of hope, and keep a little prayer,
Keep a little bit of fun to keep away despair,
Keep a little laughter and keep a little cheer,
And keep a touch of humour to keep away a tear.
Keep a little courage, and keep a smile that's bright,
And keep a little date with faith until all things come right."

—Peppermint.

I THINK the most inspiring word in our language today must be "Faith." It is one of our oldest words, and one of the most beautiful. Faith, hope, belief, honour: it means all those. And if ever we needed a word with those qualities to use, to speak, to think about, it is now.

"Peace on earth, and goodwill toward men." How hard it is to say that in these times. What mockery it sounds. How despairing and insincere. But only until we add the words ". . . and faith." Faith in the belief that out of the blood and hell of this war there will rise a new era that will bring peace and contentment, faith in the knowledge that out of rain there must come sunshine, out of tears there must come laughter. Faith in everything; in our leaders, in our country, in our home, in our friends. Faith. It is something solid we can get our teeth into. It is dependable, trustworthy—it drives us on. Yes, that is the word we have been waiting for. That's the word that lifts up a thousand hearts and comforts a thousand minds. Faith. It's a pretty word, a soft word, a word that prompts no evil thoughts. Go down on your knees and thank God for it.—**Alva, Christchurch.**

OUR Princes of Wales have as their motto "Ich dien" (I serve), and One greater than royalty taught that service to others is the highest goal that men may aspire to. What a fresh light this thought sheds on the word service. Yes, service is the word I choose as the most inspiring—service to one's home, one's country, and one's God. In service we find relief from fears and anxiety, we find the joy of co-operating with others, and we find infinite satisfaction in the knowledge that we are doing our bit to help the world to a new peace and happiness.—**Country Cousin, South Canterbury.**

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. . . How Does Your Garden Grow?

I KNOW your garden will be keeping you busy during every spare minute just now. It is amazing how much time we can while away in the garden, but there are few occupations so pleasant, and the reward is usually a rich one. Now is the time to think ahead to your spring flowers, and here is Mr. Hyde to tell you what to do.—**MARY.**

ATTENTION to cultivation, feeding, etc., flowering plants in beds and borders will still be required, while watering may now be more often left to natural rainfall.

Necessary hedges, when in good condition, provide shelter, privacy, and a natural setting that is very effective in the flower garden. To obtain that condition for as long a period as possible they should, now the season's growth has been almost completed, be carefully trimmed before the new growth has hardened. In doing this, the ideal form should be kept in mind; it is a rather wide, well-furnished base and somewhat narrower top. This design affords better lighting to the basal growth, and consequently greater vigour there. Large-leaved hedge plants such as cherry, laurel, karaka, etc., are best trimmed with secateurs. If the spring, especially, of this tool is well oiled the work is not so arduous as it may first appear, while the result is greatly superior to that of the more usual treatment. Karo (*Pittorsporum crassifolium*), which is so popular on the heavier soils in the North Island, also usually responds better to this method of trimming.

What To Do During February.

Trim hedges, giving them very careful consideration.

The season for planting bulbs has begun; narcissus and crocus should be among the first planted.

Sow hardy annuals and biennials towards the end of the month and during March. They include antirrhinum, calendula, cornflower, Clarkia, godetia, larkspur, Shirley poppy, sweet sultan, sweet peas and Virginia stock.

Autumn is the best time to plant varieties of paeony, lily and bearded iris.

Where additions or new gardens are to be made, they should be started now. A well-proportioned plan and careful surface grades are essential to success.

The season for planting flowering bulbs has now begun, and many hardy flowering annuals are best sown during February and March. Some bulbs, such as tulips, benefit from a period of ripening in dry, warm storage, but others, narcissus especially, are best planted now as soon as possible. Towards the front of a shrubbery border, or in good land sown down in grass, they flourish for three or four years with little attention, and tell us very pleasantly when spring is here. Fairly large groups each of one variety or, when planted in grass, one variety only, are most effective. In light land five or six inches of soil above the bulb is not too much, but in heavier land they should be placed rather nearer the surface. Crocuses—purple, blue, or yellow—flourish in the fine turf when planted three or four inches deep, and look well planted in drifts on a rockery.

Towards the end of February, and during March in good friable soil, hardy annuals and biennials which may be sown include antirrhinum, calendula, cornflower, clarkia, godetia, larkspur, Shirley poppy, sweet sultan, sweet peas, and Virginia stock. The majority are sown in drills about a foot apart where they are to flower, and thinning is often best deferred until the spring. Where the land is heavy, approved kinds are sown in a well-drained position and planted out in flowering quarters during July and August. On well-drained land in the warmer districts, where sweet peas may

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be sown during March, the land should be prepared now by trenching and working in a generous dressing of decayed farm manure, compost, and bonedust.

As the autumn is the best time to plant peonies, lilies, and bearded iris, the fact cannot be overlooked. These plants have a very short resting period, and are therefore best removed when necessary as soon as that period arrives and left out of the ground for as short a period as possible. The roots must not be allowed to become dry in any degree. Among civilised people the peony has been a garden favourite so long as there is any historial record. The ancestors of modern hybrid varieties include species native to Northern Asia and Europe which have given their progeny a robust constitution which will easily endure the coldest conditions here. The colours range from white through all shades of pink to darkest red and of various forms. They like a rich, heavy soil and dislike disturbance.

Plant them about 3ft. apart with the buds just at the surface, and do not lift them again for ten years or more. A generous food supply and water in dry weather are their main requirements, and they are specially suitable for planting in the foreground of a shrubbery. The lily requires no introduction; with its roots in a cool, rich soil it blooms consistently from early to late summer. The bearded iris in its richly coloured modern form is not so well known, but it could well be made a special feature where the soil is good but generally warm, dry, sunny, and alkaline.

Where considerable alterations are to be made in the flower garden arrangement, a start is best deferred until about April, as it demands the removal of a number of plants. Where new gardens are to be made, however, they are best started now, working carefully to well-thought-out plans with a view to sowing down lawns in March and planting during the late autumn and early spring. In addition to good design, surface levels should be easy so far as possible and such as will run surface water away from the dwelling into channels and sumps big enough to accommodate the heaviest rainfalls experienced.

—WM. C. HYDE, Horticulturist, Wellington.

Salads for Summer

THE prize of 2s. 6d. for the best salad suggestion is awarded to "Kowhai," Mangatainoka, for the following entry:—

MIXED VEGETABLE SALAD.

1 small cooked cauliflower, 1 small cooked beetroot, 1 small cucumber, 2 or 3 firmly cooked potatoes, 2 tomatoes, 1 crisp lettuce, ½ pint salad dressing, parsley.

Divide the cauliflower into small sprays, cut the beetroot into fine strips, slice the cucumber and tomatoes. Place in layers in a salad bowl, and season each layer with salt and pepper. Pour over the salad dressing and garnish with a border of lettuce. Sprinkle each layer with chopped parsley.—**"Kowhai," Mangatainoka.**

CABBAGE SALAD JELLY.

Dissolve sufficient gelatine in boiling water to fill mould in the proportion of 1 dessertspoon gelatine to ½ pint liquid. Add vinegar or lemon juice and salt to taste. When jelly is nearly set stir in 2 or 3 tablespoonsful of finely shredded young, raw, white cabbage, twice as much celery, two tablespoons eschalots, one tablespoon parsley, and (if liked) ½ teaspoon red chillies. Pour into 1 large or individual moulds. When set serve on lettuce with mayonnaise dressing.—**J. Fisher.**

SUMMER SALAD.

1 large lettuce shredded, 1 clove, garlic cut very fine or 2 spring onions, ½ cup each mustard and garden cress or 1 cup watercress, about 1 doz. leaves of sorrel chopped fine, a little parsley and celery, 1 young carrot, 2 boiled eggs, lemons, cream.

Shred all the greens and grate the carrot, mixing well in a bowl. Decorate with whites of eggs, cut into rings. Serve with a dressing made of yolks of eggs, sugar, salt, mustard, cream, and lemon juice or vinegar.—**Elizabeth, Gisborne.**

CUCUMBER AND CARROT SALAD.

Cook some young carrots until quite tender. When cold, cut into thin lengthwise strips. When ready to serve peel an equal amount of cucumber and cut into fine strips. Arrange carrots and cucumbers on lettuce, and serve with mayonnaise dressing.—**J. Fisher.**

SALAD SUPREME.

Wash, drain, finely cut and thoroughly mix some fresh lettuce, cress, mint, parsley, and onions. Slice hard-boiled eggs and tomatoes and mash one small tin of salmon or minced cold ham. Place a layer of greens in a salad bowl, add a layer of sliced eggs, a layer of salmon or ham, then a layer of tomatoes, and continue in that way until bowl is filled, and serve with mayonnaise dressing.—**Topsy, Gore.**

How Is The Biscuit Tin?

THE biscuit tin—it is the favourite haunt of everyone. When the family comes in hungry and tired, give them a cup of tea and a crunchy biscuit.

2/6 for the best biscuit recipe sent to the "Mixing Bowl" by February 20, 1942.

A NICE SALAD DRESSING.

1 breakfast cup cream, 1 raw egg, 2 tablespoons sugar, salt, pepper and mustard to taste; milk, 2 tablespoons; vinegar, not quite half cup.

Beat cream, milk, raw egg, and sugar together, then add salt, pepper, and mustard mixed to a thin paste with a little of the vinegar; add rest of vinegar and beat for one or two minutes.—**Miss Joyce McNab, Waimauku.**

A SUMMER SALAD.

Dice some cooked potatoes and mix some cooked peas and carrots, little sprigs of cauliflower, and any other vegetables you may like; add some chopped apple and raisins. Arrange

crisp lettuce leaves to form a basket on individual plates. Pour over a good dressing and decorate with pieces of pear and chopped ginger. Served with balls of soft cheese and brown bread and butter this makes an excellent lunch.—**Laurel, Feilding.**

AMERICAN SALAD.

Scoop out the centres of as many tomatoes as required. Mix the pulp with equal quantities of finely chopped celery and chopped pineapple. Fill the tomato shells with this mixture. Serve on lettuce leaf with mayonnaise dressing. A quicker method would be to serve the chopped pineapple, chopped celery, and sliced tomatoes on a bed of lettuce leaves.—**"Country Cousin," South Canterbury.**

CHEESE CRISPS.

Make a light scone mixture. Knead, then roll out very thin, and cut about 4 inch square. Spread over a mixture of grated cheese, beaten egg, butter, salt, and cayenne pepper to taste. Bake in a hot oven for 10 minutes. Delicious for afternoon tea, or as a savoury biscuit for supper.—**"Sue."**

ORANGE CRISPS.

½ lb. butter, 2 packets orange jelly crystals, 2 oz. sugar, 2 eggs. Beat well, add 4 oz. coconut, 4 oz. ground rice, 8 oz. flour, 2 teaspoons baking powder, and a pinch of salt. Put on a cold, greased tray, and bake 15 minutes.—**"Sue."**

LADYSMITH CAKE.

½ lb. butter, ½ lb. sugar, 4 eggs, ½ lb. flour, 1 heaped tablespoon cornflour, 1 heaped tablespoon Edmond's custard powder, 2 level teaspoons Edmond's baking powder.

Cream butter and sugar, add well beaten eggs alternately with sifted dry ingredients. Take less than half the mixture and add 4 level teaspoons cinnamon and 2 extra tablespoons flour. Place in greased tin, spread with a little raspberry jam. Put remainder of mixture on top. Bake in greased tin about 1½ hours (400° F.).

KISS CAKES.

2 oz. butter, 2 oz. sugar, 2 oz. flour, 2 oz. cornflour, 1 egg, 1 level teaspoon baking powder, jam, and pinch of salt.

Cream the butter and sugar, add beaten egg, then dry ingredients. Place small teaspoonfuls on a greased tray, and bake in a good oven for about 10 minutes. Stick together with jam.

QUINCE CONSERVE.

Take three pints of water, and 3 lb. sugar, or Brewers crystals. Boil these together for as long as it takes to cut the quinces into small cubes. (There should be 3 lb. after coring and peeling.) Now throw into fast boiling water, and cook until a deep, rich red in colour. Cores and peels may be tied in muslin, and boiled also—this helps to stiffen the conserve. When cooked, pot at once, and seal while hot. —**Lady Jane, Wellington.**

MERINGUES.

Put the white of 1 egg, pinch salt, 5 oz. sugar, and 2 tablespoons boiling water into a basin. Stand the basin and contents in a saucepan of boiling water on the stove. Beat with egg beater 5 to 10 minutes, until mixture keeps its shape. Put in teaspoonfuls on well-warmed and greased tray, and cook in cool oven about ½ hour.

MACARONI.

Put 1 lb. flour into a basin, then take a spoonful out (for dusting the macaroni before cutting up). Make a hole in the flour and add three eggs, with a little lukewarm water and a pinch of salt. Work this well into a dough, allow to stand for five minutes. Cut in two, and each half in turn roll very fine with a light touch, until it looks like fine chamois leather. Roll as a pancake, cut off in fine strips, and shake out to prevent from sticking. Hang to dry on a thick pole. When dry it is ready for use.—**M. Taylor, Whangarei.**

CUSTARD ICE CREAM.

2 cups scalded milk, 1 tablespoon flour, ¼ teaspoon salt, 2 cups heavy cream, 1 egg slightly beaten, ¾ cup sugar, vanilla essence to taste.

Mix the flour and sugar, add milk slowly, and cook and stir over hot water eight minutes. Add cream and flavouring, and freeze. A variety of flavourings may be added to this basic recipe.

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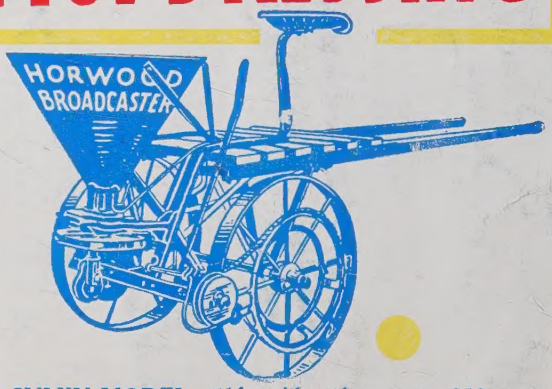

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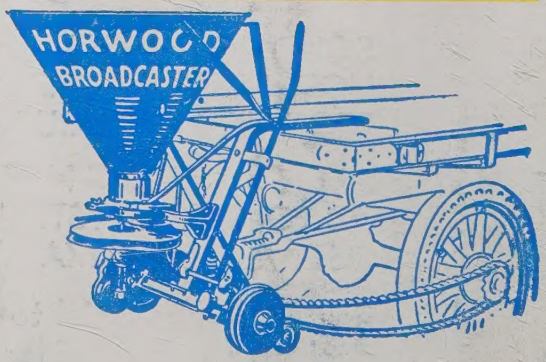

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